SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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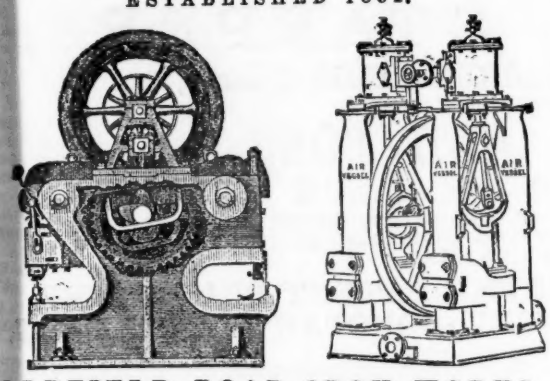

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PARIS, BRONZE MEDAL, 1867.

ORDER OF THE CROWN OF PRUSSIA.

FALMOUTH, SILVER MEDAL, 1867

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

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At the south end of the St. Gothard Tunnel, where

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Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24·90, 27·60, 24·80, 26·10, 28·30, 27·10, 28·40, 28·70 metres. Total advance of south heading during January was **121·30 metres, or 133 yards.**

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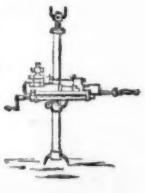

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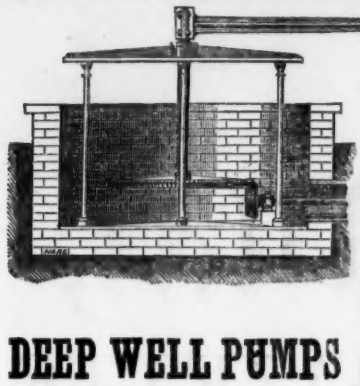

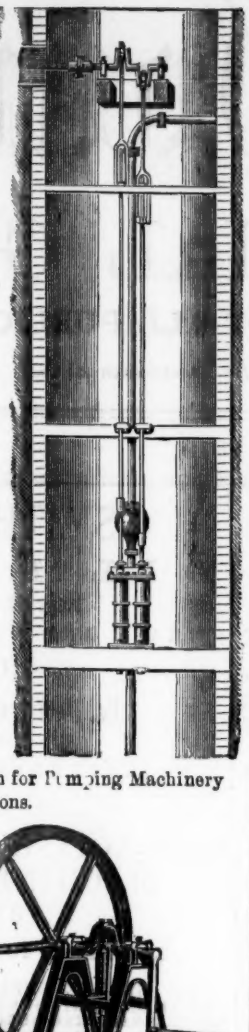

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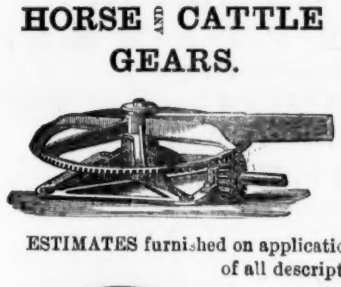
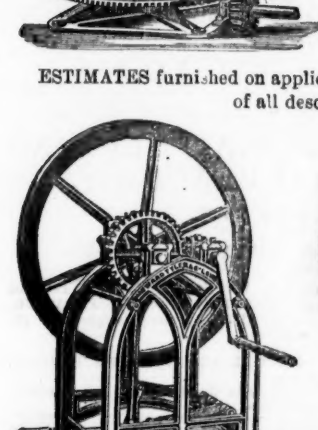
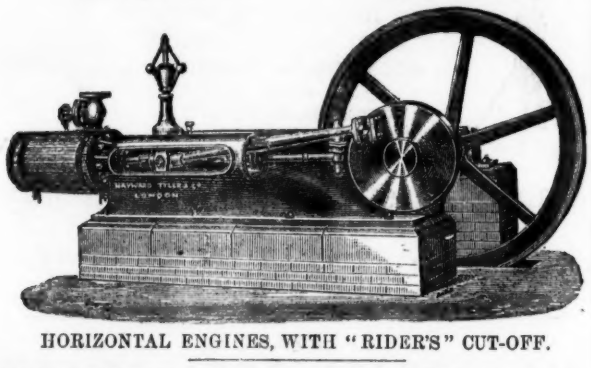


ESTIMATES furnished on application for Pumping Machinery of all descriptions.



WITH ENGINE FRAME for Deep Wells.

WITH ENGINE FRAME for Shallow Wells.



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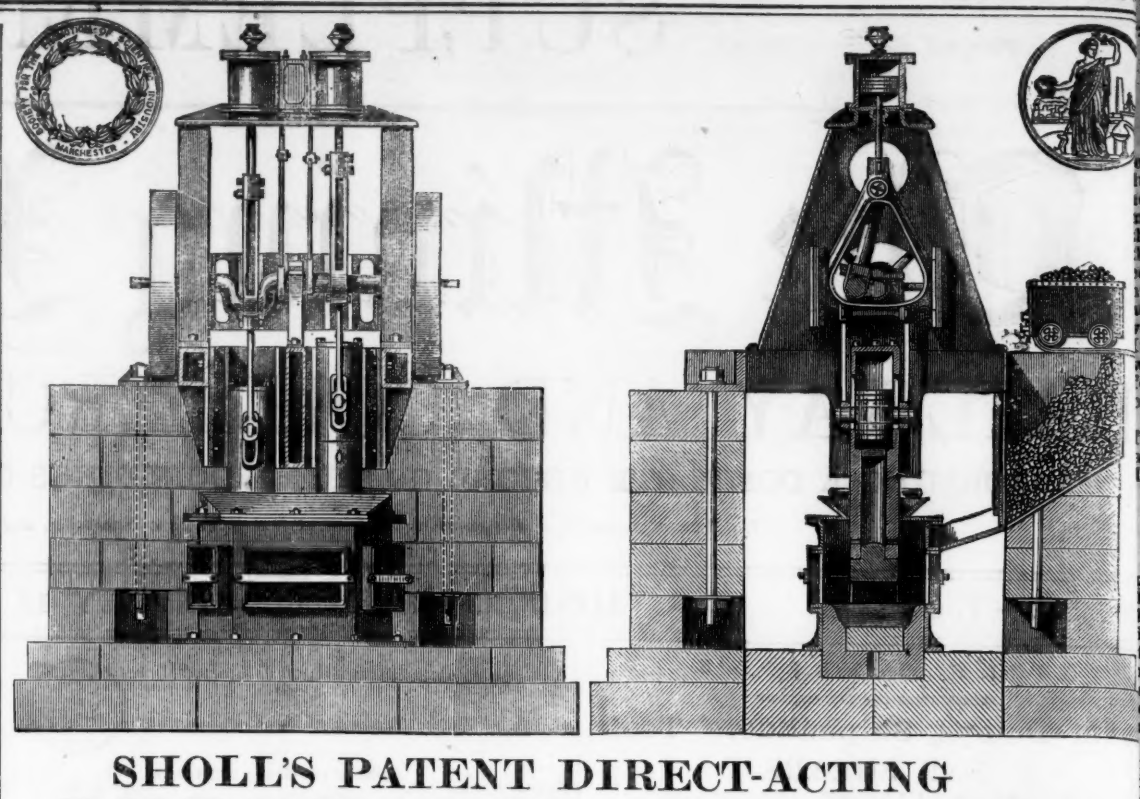

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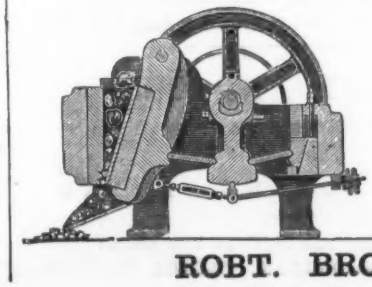

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MINERS' SAFETY LAMPS.

Sir,—It is pretty generally known that I have been for the last few years actively engaged on this subject with the hope of producing a safer lamp with a light superior to any in use. There is no difficulty whatever in doing that, but hitherto I could not see any way to do so, except at an additional cost of (say) 7s., and even then the plan I had did not altogether please me, it wanted something I could not hit upon. Also there was no diminution in daily cost. Now, however, I have constructed a lamp which, in my humble opinion, leaves little to be desired. It is practically safe, as no flame could "blow through" at any velocity. The light is very good, being about half as much again as that of the Clanny. It will burn for 16 hours without being retrimmed or touched, and with but a trifling deterioration in light; and it will keep alight four more hours, but the light wanes during that time. It is always cool to the touch.

What will be the cost of this lamp I do not yet know, but I fancy from 2s. 6d. to 5s. more than the ordinary Clanny; however, it gives a superior light for double the time, and at half the daily expense. It is simple in construction, and readily cleaned.

Baron's Court, West Kensington, Jan. 15. J. D. Shakespear.

ON CONSUMPTION OF FUEL AT COLLIERIES.

Sir,—The great waste of coal in connection with boilers and engines at many of the collieries in Great Britain, which the writer has noted from personal examination of many collieries, prompts him to make a few comments on this subject, with the view of inducing owners and managers of collieries to give more attention to the saving of fuel, and by introducing improvements (which, he may add, would not in many cases be very costly) bring about a saving in the cost of working coal, for the fuel saved in colliery consumption could in most cases be sold or utilised in other ways, and thus assist in reducing the general cost of getting coal.

It may be said that the cheapness of small coal and its unsaleableness at some collieries at the present time render unnecessary any improvements having for their object the saving of fuel for boiler use; but this should only be a stimulus to find out fresh uses for small coal and utilising it for other purposes, such as making patent or manufactured fuel for steam, railway, and even house purposes at a price below the cost of best large coal.

At the water-works about London and other places and at some of the Cornish mines the greatest care is exercised in the erection of boilers, and the most approved form of boilers is used. The Cornish boiler is usually 30 ft. long, 6 ft. in diameter, with an internal tube 3 ft. diameter, in which the fire-grate is placed. The products of combustion pass through the tube, then separate, and pass through the side flues, uniting again they pass under the bottom of the boiler to the chimney. The heat by this means is fully abstracted, so that the gases escape into the chimney at a low temperature. It is possible to reduce the temperature to 300°, and still have sufficient heat to cause the required draught in the chimney.

The upper surface of the boilers is covered with sand and ashes 12 in. or more deep, and over all a shed is erected. The steam-pipes are covered with non-conducting composition. The steam cylinder is especially well protected, either by a steam jacket, and enclosed by sand and ashes, and a brick casing—or the steam jacket may be dispensed with, and the covering of 8 in. or 12 in. of stone and ashes and a brick casing used to prevent any radiation and loss of heat from the cylinder.

To obtain economical results besides these there must be careful firemen, clean boilers and flues, steam-tight pistons and valves. This, with the steam used expansively, having an initial pressure of 40 lbs. or 60 lbs. per square inch, furnishes the good results obtained with Cornish engines and boilers, of which we have heard so much. Of late years the inferior coal used for boilers in Cornwall has prevented the maintaining of the high duty of a former period; but it is probable with good steam fuel similar results could now be obtained. The best Cornish boilers, using first-class Welsh coal, evaporate on an average 9 lbs. of water from 100°, with 1 lb. of coal. The coal used per horse-power per hour is 3 lbs.; the modulus or useful effect being ·8 of the indicated work. The water in millions of lbs. raised 1 ft. high by the combustion of 112 lbs. of Welsh coal giving the Cornish duty equal to 59,000,000 lbs.

At one of the water-works near London 25 boilers are erected, 30 ft. by 6 ft. diameter, internal flue 3 ft. 9 in. diameter: 20 of these are in constant use. The coal used in 24 hours is about 19 cwts. for each boiler. A thin fire, about 12 in. in thickness, is maintained, and fuel is added thrice in an hour. At the time of firing and afterwards a jet of steam is introduced over the fire; this with careful firing prevents the emission of black smoke.

Mr. W. West, an engineer of Cornwall, states that a really good Cornish pumping-engine should lift 80,000,000 lbs. 1 ft. high by the consumption of 112 lbs. of coal. This is meant to apply to the conditions named above as to using first-class coal, covering boilers, cylinders, &c. He also says a good Cornish boiler, 30 ft. long, 6 ft. 4 in. diameter, and fire tube 3 ft. 10 in. diameter, ought to evaporate 11 lbs. of water by the consumption of 1 lb. of best coal, and by slow combustion at the rate of about 1 cwt. per hour.

The results that have been obtained in Cornwall and other places in economy of fuel can be realised also at collieries, having regard to the quality of coal used, whether clean small coal or coal mixed with impurities. It may be stated that the plain cylindrical boiler with flash tubes is not economical unless there is sufficient breadth exposed under the boiler, and great length of boiler to be acted on by the heat, and sufficient heating surface in contact with the water. With return flues—that is, a short boiler with greater flue length—a more perfect absorption of the heat is obtained. The temperature of the waste heat at the bottom of the chimney is certainly a good test of the efficiency of a boiler, and ought to be frequently tried.

A most extravagant and wasteful consumption of fuel goes on at some collieries because the boilers are not of an improved kind, either Cornish or Lancashire boilers, nor are the cylinders, steam-pipes, or boilers covered with a non-conducting material. The boilers are not even protected from the weather by a shed, so that a large deduction must be made for radiation of heat from the boilers and cylinders, and consequently loss of duty in the engines.

It has been remarked that two Lancashire boilers, fitted with Galloway tubes, produce as good a duty as three cylindrical boilers of equal length. When the waste heat passes into the chimney at a temperature of 1000° we may be sure there is something wrong in the setting of the boiler, and an extravagant consumption of fuel will be the result. When the temperature of the waste heat (by proper setting of the boiler) can be reduced to 300° at the base of the chimney we may calculate on a large saving in the use of fuel. Again, sufficient boiler power should be provided because hard firing is not compatible with economy. The combustion in a good Cornish boiler does not exceed 1 cwt. per hour. The admission of a certain quantity of air just sufficient to support combustion must be attended to carefully. Various expedients have been tried with this purpose in view, such as blowing a regular quantity of air on the fire by means of a fan, admitting hot air or steam jets at the bridge of the furnace to assist in the perfect combustion of the fuel, and to prevent smoke, all of which devices are of great value when properly carried out.

At several collieries in the North of England the waste heat from coke ovens is being utilised for heating boilers. At Byers-Green Colliery, near Durham, there are 350 coke ovens of the bee-hive type. Of these about 90 are used in connection with a large flue to heat eight boilers by the waste gases evolved from them. The boilers are 50 ft. in length. The coal previously used to heat these boilers is all saved, and amounted to 100 tons per week, or upwards of 5000 tons in a year. These boilers are not adapted for firing with coal, but some boilers can be fired either with coal or the waste heat from the ovens as required. The coke in the 90 ovens mentioned above is not at all affected either in yield, quality, or appearance by this arrangement, but rather improved. It is important to have a supply of pure water for feeding boilers. It is worth while incurring an expense for collecting pure water rather than use water injurious to the boilers, and occasioning great trouble in cleaning them, especially where Galloway tubes are adopted.

Where the price of coal is great we always find the greatest care exercised to economise fuel, and we should like to see the same carefulness used in colliery districts in place of the slovenly methods we may often see at many collieries where small coal is thought to be of no value. But it may not always be so; small coal may again become an article of sale and value. It would be well if the small coal could be cleaned mechanically from impurities; it would then be equally valuable as fuel with large coal, and as before stated, the utilisation of small coal for making artificial fuel is much needed, especially in the North of England, where small coal of the steam coal class of collieries is an entire drug in the market. M. E.

CAUSES OF COLLIERY EXPLOSIONS.

Sir,—Will you kindly allow me through your valuble paper to suggest to all, and especially to those who have the direction of our mining operations, that there are several natural causes of those periodic calamities which have not, in my opinion, been hitherto sufficiently taken into account by those who have sat in judgment as to the causes in operation from time to time.

1.—When the earth's surface is frozen, as in the late autumn, the winter season, and the early spring.

2.—When the earth's surface is saturated with continuous rain, and especially when either of the above causes is accompanied by—

3.—The presence of an atmosphere surcharged with watery vapours; which latter fact is amply sufficient of itself to cause an explosion, by a lack in the supply of vital air to carry off through the appointed means the inflammable gases.

The two former causes hermetically seal up all the natural fissures, in the one case by freezing, and in the other by the swelling of the earth from saturation by water.

The gases accumulating under these circumstances increase in pressure until in their descent they form "blowers," or force down the weakest parts of the roof of the workings; and in the latter case, in the short space of one moment, the whole life in a pit is jeopardised.

If to either of the two first causes the third be added, then woe be to the poor miner and the wealth of the proprietor. The wonder is that we have not more of those dreadful catastrophes in our mining operations. An atmosphere surcharged with watery vapours travels so slowly (especially in cold weather) when impinging upon the sides of a shaft, the air-ways or workings of a mine, that it becomes of itself a great danger to the life of those engaged in deep workings, such as those at the Dinas Colliery, which you report to be over 400 yards. There is no doubt that more attention bestowed upon the above natural causes would let in a considerable amount of light as to the silent but certain results of natural phenomena. And I hesitate not to say that it would be perfectly easy to prevent those dreadful consequences, and at a far less cost than the annual sacrifices now made in capital, to say nothing of the terrible loss of human life, and the most painful circumstances by which death can approach an important branch of our toiling community.

Leeds, Jan. 15. An Observer.

THE GREAT CARBONATE DISTRICT OF COLORADO—LEADVILLE.

Sir,—In the early days of the then Territory but now the State of Colorado the discovery of gold led to a great rush of prospectors and speculators from almost every State in the Union. Some few made fortunes; but many millions of dollars were lost through reckless expenditures, promoted chiefly by persons thoroughly ignorant of mining in any way. "Process" schemers probably did more mischief than any other class, as the country in every direction is strewn with their abortions. The gold, silver, copper, and lead lodes were the same then as they are to-day; but the mode of operating them is very different now. System in a practical form is brought into action; the consequence is the failures are very few in comparison. The locality of which I am now about to give you a brief description has been known for many years as California Gulch, in Lake county. It is a confluence of the Arkansas river. It has been the site of extensive placer works. Several millions have been extracted from its gold-bearing gravels, and from my recent examination I believe millions yet remain, for I have never yet found bed-rock lower than two miles below the town of Oro; but in my recent geological survey I found the source of the alluvial gold. It is so plain and unmistakeable that a mere novice in geology will admit its locasis.

The Leadville hills form the spurs and steppes of that portion of the snowy range known as the Horseshoe. They are of Devonian age, stratiform in structure, and reposing uncomformably on the Silurian below. They consist of trachyte, quartzites, lime, and shales. These are both calcareous and siliceous. The lime varies very much in different beds. Some are highly ferruginous, some argillaceous, and others again vitreous or crystalline. The dolomite variety occurs in many places, but it is not granular. Veins of calcite in transparent crystallisation are found in the more indurated rocks, associated with the sulphate and carbonate of magnesia. There are also bed veins of alstonite—baryto-calcite, but not in any appreciable quantity as far as I have yet seen. There is supposed to be a general contact line between the igneous and aqueous deposits of an uniform structure throughout this locality—the porphyretic rock above, and the limestone below; but I must object positively to this commonly conceived idea, and for one especial reason. I know of many places in these mountains where the opposite is the fact—lime above, and porphyry below.

Now, so far as the present workings are concerned they are pretty generally confined between the porphyry and the lime; but one of the largest mines, called the Little Pittsburg, is not covered by any porphyry or trachyte at all. The ore lies on a bed or seam of brown oxide of iron, which is from 1 ft. to 20 ft. thick. On this iron reposes in distorted shapes of various thicknesses and beds of ochreous earths, containing the sulphuret and carbonates of lead. They are of two kinds—the granular and the compact. The former is in the form of sand or dirt, and can be dug up by the shovel. It runs from 20 ozs. to 300 ozs. of silver per ton; the sulphurets of lead average 55 per cent.; and the hard carbonates from 25 to 45 per cent. In consequence of the cheap way the mines can be worked, on account of the deposits being so near the surface, and an entire absence of water, they are exceedingly profitable. In some instances the ore is merely covered over by the debris or mountain wash, which may be called the diluvial of the Devonian era. These hills are subject to faults and breaks of the formation, and near them the seam of ore is thrown down to depths not as yet ascertained in any part of the district. It is just the same as in the coal measures. During my recent geological survey I have traced the courses of some of these breaks. They are not confined to any regular course. They are the result of the disruption of the formation of subsidences. They alter the continuity of the seam of ore, making it come to an abrupt stoppage or direct downthrow. In other instances it would appear that while the lime beds were in a semi-plastic state they became squeezed up, forming acute wave lines and sometimes folds. The ore then is in circular pockets, but very rarely ever separating from its iron base. There must be at this time more than a hundred mines at work; of course, the bulk of them are prospecting operations, but everyone is sanguine of success. The great aim is to get down through the trachyte porphyry covering. This is of varying thickness; but in very few instances, when the contact with the lime has been struck a course of ore has not been found.

About 18 months ago that which is now known as the town of Leadville consisted of about a dozen log cabins occupied by the gulchers—placer claim workers. Its rapid growth is the astonishment of everybody who has paid it a visit. There are now about 700 buildings, with 6000 inhabitants; four large smelting-works, and two others in course of construction; three banks; three churches; three sampling works; 12 good hotels; extensive livery stables; 40 drinking and gambling saloons; two theatres; a fine new post-office; several large stores, where every commodity required for the mines and miners can be obtained at the lowest current rates; a foundry, gas and water works are in course of construction. I think there are five if not more saw-mills in operation. More than 200 teams are in constant requisition hauling ore down from the mines to the works and bringing in supplies for the town from Denver and Colorado Springs. Three lines of railway are projected, one of which will reach the town this next summer, as a large force of men are working on it now. A large amount of ore is sent off to St. Louis, Golden, Denver, and Omaho; about 100 tons per day is smelted in the local works. These are totally inadequate to meet the increasing acquirement of the miners. Stocks are accumulating very fast. What is now chiefly wanted is a system of hydro-metallurgy whereby 25 oz. ore can be reduced at a profit to the miner and reducer. At present any ore that does not contain about 60 ozs. of silver is not considered to be worth looking at; and I am informed by one of the largest mine owners that he does not get a cent of money for any of his lead ores that assay under 30 per cent.

Now, as the mines are chiefly within two miles of the town, I think the low grade ores should attract the attention of our London metallurgical friends. There are already to be seen on the dumps (spoil heaps) over 300,000 tons of ore that will assay over 30 ozs., and they are so easy to work too, being ochres and lime gossans. Even the iron ore itself assays from 10 ozs. to 18 ozs. Such is the beginning of Leadville now 18 months old. What may be its proportions in another year would be a hazard to state. Most part of this summer I have been engaged in trying to close up the last part of my snowy range geological surveys. I shall furnish the readers of the Journal with a full description of that portion of the rocky mountains. Geologically it is very interesting, and commercially very valuable. I have found hundreds of locations where rich silver-lead ores crop out at surface. The carbonates of copper in many instances are also rich in silver. Within the past two months openings have been made on some of these surface deposits—one especially in Sacramento Creek. The ore is calcareous clay-stone, and runs 220 ozs. in silver. No mining proper has been needed thus far, for the workmen merely dig it up. It lies within 6 ft. of the surface. A new town has been laid off at this place. Next spring there will be active operations here and along the side hills in the immediate vicinity. It is on the eastern side of the range.

Alma, Colorado, Dec. 23. Charles S. Richardson, G.M.E.

GOLD IN VENEZUELA.

Sir,—The discovery of new and rich gold mines in the neighbourhood of the Orinoco, Venezuela, is an interesting circumstance in these days; but it does not come upon us with the same surprise we felt at the announcement of its existence largely in the Madras Presidency.

We know that gold has been worked at Caratal, in the same district, for some years, and at a good profit, and we all of us call to mind that it was somewhere there that the ill-fated Sir Walter Raleigh was seeking that El Dorado which may be after all but a fable magnified by his love of romantic adventure.

I am thoroughly disposed to believe gold will be found throughout all the northern portions of Venezuela if thoroughly searched for by competent parties. We already hear of both gold and silver being found on the Bolivar estate, nearly opposite to the Island of Curaçoa, and if a clever expert were sent out there to work it systematically much more would no doubt be found; but in a country so thickly wooded, and so full of close vegetation, it is difficult to get to the soil at all—so that chance discoveries must be rare.

It seems regretable that the Government of Venezuela cannot engage a competent and experienced man to go through a systematic geological exploration. Valuable discoveries would doubtless result from it, and the Government would directly and indirectly reap the benefit from it, and we should further enlarge our field of producing sources, which are still much needed for the ever-increasing wants of the commercial world.

There has been a well-founded prejudice ever since the time of Sir Walter against following his steps in ransacking the banks of the Orinoco. In all parts of the tropics the neighbourhood of the great rivers are almost necessarily pestinential; but further back, as one rises a few hundred feet above sea level, there is nothing especially unhealthy, and no reason why Europeans adapting their manner of life to the climate should not work there for some years, and still maintain good health. Experience only can teach this; but it would be very useful to know whether any old medical practitioner has ever published a work containing short rules for Europeans to preserve health in the tropics, with the necessary remedies in simple cases. It would be of infinite service to beginners.

Union court, Old Broad-street, Jan. 15. Jackson Barwise.

MINING MARKET NOTES.

Sir,—The first three days of the week were taken up with the settling. The accounts were somewhat heavy in Richmond, Colorado, Don Pedro, and Eberhardt—these being among the principal properties which have been dealt in during the account. The business for this account has opened briskly, and there is a fair prospect of an average account. These remarks apply chiefly to foreign mines, home mines for the most part having only nominal quotations.

Some little excitement was caused on Tuesday by the sudden advance of Eberhardts from 3¼ to 4; the advance, however, was not sustained—they have since fallen away. At this time of the year mining shares usually attract the capitalist's attention, and as a move has taken place in some of the mines it is only natural that it should increase. This is hopefully looked for.

Don Pedro.—The rapid advance which has taken place in the price of the shares is in accordance with opinions long held by those initiated in the merits of the property. There is no progressive gold mine on the London market which offers such a chance of success as does Don Pedro. It has paid over 225,000*l.* in dividends, and should the improvement continue which has been reported dividends will again be paid at no very distant date. The formation being one peculiar to the production of free gold the expenses for extracting the precious metal are not large, as it is done by washing. There are ample funds in hand to bring this property into a prosperous condition. The improved return has tended to keep the price of the shares steady. Larger returns may now be looked for.

Eberhardt.—These shares are again beginning to attract attention, and before long they must take a prominent position on the market. During the cessation of operations in the tunnel dealings in the shares have been comparatively unimportant. Funds having been raised the driving of the tunnel has been resumed, and the belief in its success is becoming more general. Should rich ore be struck Eberhardt would soon rank as one of the first mines in the United States. No better time than the present could be found for investing in the shares, and capitalists will do well to avail themselves of the opportunity. Already the shares have had a considerable rise. No official report has come to hand; in the event of favourable news the shares must see a further rise.

Richmond.—What might be done here? Issue the new shares talked about last year, pay off the debentures, and create a reserve capital, so that there would be something to fall back upon when needed. Richmond has undoubtedly in the past been a loser through not having a reserve balance. An annual visit to the mines of two directors accompanied by a mining expert, and their report circulated amongst the shareholders. Richmond is a mine of the first magnitude, and as such is deserving of the best attention. The shares have remained pretty steady. The return is larger, but two furnaces having become blocked there may be a falling off next week. It is not stated but it is supposed that they are the new furnaces. If such is the case, then there is fair evidence that the furnaces are at fault—really too large. From the best sources I gather than none of the rich ore in the 500 ft. level has yet passed through the furnaces. If this is the fact great things may be expected when everything is put into good working order. Things certainly have been looking very gloomy of late; it is not the fault of the mine, but the unfortunate circumstances which have surrounded its working.

The Distress in Cornwall.—The reports which have appeared

in the Daily News are saddening, and to those directly interested it must be very disheartening. For the time being home mining is evidently fearfully depressed; and, until there is a revival of trade, it will require prudent and economical management to make anything like profits. We may as well look the fact in the face, and act accordingly.

The following are the closing quotations:—Chontales, 7-16ths to 9-16ths; Colorado, 1⅜ to 1½; Don Pedro, ¾ to 1; Eberhardt, 3⅜ to 3⅝; Frontino, 2 to 2¼; Kapanga, ⅜ to ⅝; Pestarena, ⅛ to 3-16ths;, Port Phillip, 7-16ths to 9-16ths; Richmond, 10 to 10¼; Rossa Grande 1s. to 2s.; St. John del Rey, 245 to 255; Sierra Buttes, 1⅝ to 1¾; Plumas, 2⅞ to 3; United Mexican, 2⅞ to 3; East Van, 1¼ to 1½; Great Laxey, 16¼ to 17½; Marke Valley, ½ to ¾; Romans, 6½ to 7; South Condurrow, 10½ to 11; South Frances, 6¾ to 7; Tankerville, 2½ to 2¾; Van, 16½ to 17½; Wheal Grenville, 2¼ to 2⅜.

WILLIAM GABBOTT,
8, *Draper's Gardens, London, Jan.* 16. Stock and Share Dealer.

THE RUSSIA COPPER COMPANY.

We have been requested to publish the following letter, which has been addressed to the Mining World in consequence of some remarks which had appeared in that Journal:—

SIR,—Referring to the account of the transactions of the general meeting of the shareholders just held, will you kindly allow me to point out that the error, which explains the non-fulfilment of original estimates, however great, and however blameworthy, was shared by numerous Russian officials and business men here on the spot; men who were among the very best able to give an opinion on the particular half-social half-political circumstances out of which our defeat has arisen. I will go further, and say that had I been enough of a prophet to foresee what relations the liberated serfs would assume to employers, and consequently had given less favourable reports of the business, I would have had against me all the reasonable evidence obtainable at the time. It should be something also to be able to say that I have not been alone in the investigation of the company's property. It was seen by two directors of the company; it was thoroughly investigated by two agents for the St. Petersburg Mutual Credit Association; it was visited by two experts sent by the company, and twice by the secretary. Is it, then, to be supposed that, had there been so much that is wrong as is implied in what is so often said at the meetings, those gentlemen would not have discovered and reported it? And is it not remarkable that, quite on the contrary, their views have not materially differed from my own? These gentlemen all made reports. Is it then fair, I would ask, to go on all these years referring alone to my reports while nothing is said of theirs? Our mistake—I say our mistake—was that experts, English, Russian, and German, directors, officials, and business men in the country, we all of us came short of the far-sightedness necessay to predict the effect the emancipation would have on the labour market; we failed, in fact, to see what has since been discovered, that the Russia Copper Company was born before its time, but then this is, after all, the utmost of our offence, for there is not one acre of land less or otherwise than was stated, and the mines have turned out to be exactly what they were described, and the profits would also have been satisfactory but for these unforseen and unforseeable circumstances. Now, as mining goes, and as business in general goes, it seems to me that if beginning at one end of the City of London and going to the other, you were to hang all those who have made a mistake in good faith, the majority of the survivors would be those who do nothing.

Referring again to the account of the meeting, I was surprised to find that, with your well-known impartiality, you should say my reports year by year have led successive chairmen to indulge in predictions which were falsified by the issues and to make promises which subsequent events did not justify. Now, so far as I know, it is a very unusual thing to make subordinates responsible for those over them in office. The directors make use of the information brought them by a large and regular correspondence, monthly, annual and special reports, and from the accounts; and they make their own independent statements and I mine. So far as mine go, I will venture to say that if you will turn to the conclusions of those reports for several years past you will see nothing which is not extremely guarded. Year by year I have endeavoured to point out what indeed is the fact best worth pointing out, that there is a process of improvement at work in the business; that year by year some difficulty is lessened and some other left behind us. This is the fact of facts in the business of the Russia Copper Company; it is one which more than any other has sustained me in my difficult task; it is one, moreover, which lies on the face of the accounts every year, not excluding those for the year just rendered. Allowances made for drawbacks resulting from the fire and from mortgage interests, the balance of loss of 1398*l.*, which our account from this showed, would be transferred into a profit of nearly 8000*l.* Is this a fact which should be lost sight of?

Again, it is said there was a feeling that I have held my post too long for my business reputation, and that there were marks of satisfaction when my damaged health and my resignation were mentioned. But may it not be asked, what change would not find seconders among disappointed shareholders? I do not blame the shareholders. They think they are right, and if really they consider it so much in their interests, I only regret they did not let me know it long ago, and I would most willingly have made room for another. Besides, it was their will only that had to be consulted, for I am their humble servant. But then I do complain of a journalist, to whom one looks for fair play, taking upon himself to make inferences for which there is no ground in the statements of those who alone can be competent judges of my service and are responsible for retaining them. What the chairman said was:—"And with regard to our manager, Mr, Rickard, I do not think I can say otherwise than that he has not been keeping so strong (*i.e.* in so good health) as a manager should, and he has now given us notice that he will terminate his engagement with us at the end of six months."

Reading your own leading article it is impossible not to see it is intended that it be inferred that I have year by year misled the directors and mismanaged the business. Now, I will venture to say that my directors have not said this nor authorised it to be said. I am quite prepared to defend the part I have taken in the management, and shall be glad in proper time and place to have an opportunity of doing so. Meanwhile I may say my experience did not begin with the Russia Copper Company, I have taken a very prominent part in building up great and successful businesses and extricating others out of what appeared hopeless difficulty. I may, therefore, be pardoned for some sensitiveness on the score of my professional reputation. I give full leave to my accusers to examine to their hearts' content my services in my present post as well as in previous ones; and this I will tell them, that, though I have had a good deal to do as expert in the promotion of businesses, my hands are clean; and let those who can prove the contrary do so.

Do you not think, Mr. Editor, that instead of repeating reproaches about obsolete estimates and indulging in recriminations which, after the explanations given over and over again, have become as ungenerous and unjust as they must be purposeless, it would be better and more like business to leave personalities out of the question and devote attention to the real business—that is, to an enquiry of what has really been done, and what it is still possible to do, to get some return for the capital? After all, we have not struggled so altogether hopelessly with our difficulties. The Voskresensky smelting has done its 8000*l.* and, during two years, even its nearly 9000*l.* of profit, and if it did not do its 10,000*l.* last year, when for the first time there was charcoal for continuous working, it was because the works were destroyed by fire. I may also add that in years when the result has been less favourable it was owing to want of capital. Now, you will admit that people do not purposely burn down their works every year; and when a business is overtaken by such a misfortune it is not usual to find it difficult to account for the "chairman's predictions having been falsified." It should be something, it should I think be a great deal, to be able to point out that, notwithstanding the destruction of the works by fire, we were able in the same year to restore those works and still make a profit of 5300*l.*

To be fair to the work of the last few years, and to be fair above all to the business, I think it should be pointed out that the farming which was once despaired of has now become a profitable and fast improving branch of the business, and that as for this work there is no lack of labour it might, when there is the means, be greatly extended. I think anything may be called profitable which yields 25 per cent. per annum on the capital, and the average of the last three years' farming is that. Fairness also demands that it should be pointed out that the floating which, as well as the farming, was a burden and a loss, has the last three years become a paying business.

These facts seem to have been lost sight of, but Preobrajensky, where unfortunately we have had to deal with difficulties of a more refractory character, and where, therefore, a favourable result has been longer delayed, has been brought forward into great prominence. Indeed, it would seem, from the account given, as if I had worked counter to the will and order of my directors, whereas in reality nothing could be further from the fact. It is true that I have been loath to see the work abandoned there, and that for the simple reason that I have seen my way to final success.

If you will enquire, sir, you will find that if the floating and farming are not abandoned, it is precisely and alone because of the self-same perseverance which is spoken of as reprehensible in the case of Preobrajensky. I will add that, though delayed, we could, had we the needful capital, make sure of success at Preobrajensky also, for at length the new mining field produces ore that will give a moderately cheap ton of copper. Further, though continuance at Preobrajensky has been made such a subject of blame to the management here, you could have ascertained, even from my reports, that the plan on which we have worked for the last two years has had in view possible suspension—that is, our plan has been to work off the stocks which otherwise in such case would perish and have to be written out of the inventories as so much dead loss; and, while gradually working off the stocks, it was resolved, as part of the same plan, to complete the trial mining on a certain limited scale, and try, if possible, to open a new ore supply to replace that of Kargalinsky, from which place since the emancipation the transport has not been possible. Accordingly no wood has been cut for charcoal during that time, and no expense gone to, except strictly within the limits of a well understood plan. Now, I would be glad if those who are so disposed to blame would point out what they would have done or what could have been done more in the interests of the company.

You are aware it is proposed to sell Preobrajensky. Mark my words, Mr. Editor, those who have the sale of it will think the perseverance there the reverse of shortsightedness or blundering, and by-and-by those interested will say the plan pursued has turned out a happy one for the proprietors.

Allow me to say, sir, in conclusion, that on June 30 next, when my term of office terminates, I shall transfer to my successor a business which, though falling lamentably short of original expectations, is by no means the worthless thing which it has been the fashion in some quarters to describe it as. It is a business which with fair play—that is, cleared of debts on borrowed capital—is shown to be capable of yielding profit, which, if not large, is still very considerable, and it may not be doubted but that in a little while one of the estates could be realised for a sum that would cover the debenture debt. This, at least, can be said in justification of perseverance, and this perseverance has had another result, and that a very valuable one to the proprietary; it has ascertained how, with the needful capital, the return may be increased in such a manner as to remove the disproportion which has, in the embarrassed condition of the business, necessarily existed between the framework of the concern and its business turnover. It is in this way, and this way only, that it is possible to render the general charges less burdensome. Here I must point out that I have stated the profit of each branch without deduction for the general expenses. These affecting, as they do, every branch of the company's business, for the sake of greater clearness of explanation, should be taken from the general results.

Those who have the annual statements will not need that it be explained why with these profits on the copper, corn, and timber the general result is one of loss; nor that it be shown that it cannot be attributed to Preobrajensky, for even there the result of the last two years is a slight profit. By this time we all know the explanation must be sought for in burden of mortgage interest; that is to say it is a question of insufficient working capital. My duty in respect of this has been to struggle on as best I have been able, making the best of things, and taking the chances of unmerited blame, such as is now imputed to me. I could say a good deal on this unhappy subject of deficient working capital, but I fear you will find that my letter is already too long. I will simply add that unquestionably it is largely to this circumstance that the general result of the business is not more satisfactory. I am no sorcerer. With the capital for half a business I cannot send home the returns for a full one.

Orenburg, Dec. 18. THOMAS RICKARD.

WATSON BROTHERS' MINING CIRCULAR.

SIR,—In the Journal of Jan. 4, and under the above heading, I observe the following:—"'A. X.'—SENTEIN MINES.—We can tell our correspondent little more than he can read for himself in the *Mining Journal* of Dec. 21, page 1419. The report of Capt. Edwards is a most extraordinary one, but as he has, it is said, been taken from the management of a coal and iron company to report upon a lead mine, we should like to know a little more about his experience in the value of lead ores, and whether, when he says a lode is worth 20 tons per fathom, he speaks or judges of a cubic fathom. Also, when he says lead ore, does he mean lodestuff just as it is broken from the stopes? We are inclined to think that as 60 miners broke 680 tons of ore in six or seven weeks he refers to lodestuff, and a produce of 10 or 20 per cent. would be a good yield of lead ore under ordinary circumstances. This would give from 68 to 136 tons of ore, and this, doubtless, of rich quality. If he intends to convey the idea that 60 men can raise 680 tons of rich lead ore in seven weeks, the mine must be a very extraordinary one, and will beat Van hollow."

In the Journal of the 11th inst., and under the heading as above, it is thus remarked—"We think, however, he will have warm work to return 680 tons of galena in six weeks, and we are told the value he puts on the lode means 20 tons of galena, and not veinstuff, per fathom; of course he could not refer to a cubic fathom."

Now, it is not my province to defend Capt. Edwards, nor to define his meaning, but, wherever he may have been in the management of a coal and iron company, certain it is that he is a thoroughbred Cornish miner, and for aught that I know an experienced one, but, although the standard of his mental capacity were far below that which is allotted to the most ordinary of mortals, knowing that frequently considerable portions of metallic veins are entirely sterile, devoid of any and every metallic substance, is it not too absurd to suppose that his meaning was simply veinstuff? And I must beg to say that I do not think anyone who is at all acquainted with mining or with the nature of metallic lodes could for a moment imagine that he intended thus to be understood. "If he intends to convey the idea that 60 men can raise 680 tons of rich lead ore in seven weeks, the mine must be a very extraordinary one, and will beat the Van hollow." I do not see that there is anything so supremely extraordinary and wonderful in the fact that in seven weeks 60 men should extract 680 tons of ore from the Sentein lode, when, as I am told, nine single-handed men are seen working abreast on it on a course of ore. But why lay such an emphasis on the Van? No doubt the Van has been a most excellent mine, and for aught I know is so still, but is this mine the only phenomenon in creation, and so far exceeds all other mines in excellence as not to be equalled but by some prodigy supernatural?

"We think, however, he will have warm work to return 680 tons of galena in six weeks, and we are told the value he puts on the lode means 20 tons of galena—and not 'vein-stuff'—per fathom. Of course, he could not refer to a cubic fathom." Why not? Why might he not have referred to a cubic fathom? Is there any reason why 20 tons of galena should not be contained in a cubic fathom as well as in a lineal one? But whether the meaning intended to be conveyed were that the 20 tons resided in a fathom cubic or in a fathom lineal I do not see that it affects the stated fact that 680 tons of ore of (say) 50 per cent. was extracted from the lode by 60 men in six or seven weeks, and this statement is in perfect harmony with the idea which may be conceived from the reading of my report on the Sentein Mine, and which appeared in the Supplement to the Journal of October 19 last.

The writer seems to be at a loss also to know how such a property of a mine was left idle so long until purchased by the English. Why the French had not purchased the thing "which they had under their noses." All I can say to this is that it would frequently seem as though what was allotted for one man would not be possessed by another. Why was it the mine which Mr. C. Lambert bought some years ago in Chili had lain abandoned longer than any one could remember? I saw the mine on his purchasing it. It was then very poor, and I remarked this to him, but such were the indications that I added—"Notwithstanding the present poverty of the mine you have undoubtedly here in store a vast fortune." Lambert died here not long ago, his personalities sworn under 900,000*l.*, all of which he was indebted to said mine. J. LEA.

P.S.—Can you, Sir, or any of your readers kindly inform me as to what is the value of a lode which is said to be worth so many tons—20 tons, *e.g.*—per fathom? To my stupid obtuse intellect this expression conveys no idea whatever of its value. J.

ROCK-DRILLS—THE ECLIPSE.

SIR,—After reading the reply of Mr. Edwards to a letter which you kindly inserted for me in the Journal of Jan. 7, that gentleman seems now to be in despair, and as a last resource is vainly directing his persistent errors to you, without any reference to those who have called his attention to facts that are certainly indisputable. Since reading Mr. Edwards's letter I have, with permission of the proprietor, examined the Eclipse drill most carefully, and find that I was perfetly correct in my statement that there are seven distinct ports or openings in the valve-box of that drill, and how Mr. Edwards can continue his statements that there are only five I cannot understand. * * * * In conclusion, I may remark that if Mr. Edwards still believes that he is right I should, with the permission of the proprietors, like to meet him and thoroughly examine the Eclipse drill, and thus prove the fallacy of his statement.

Bayswater, Jan. 15. CIVIL ENGINEER.

METALLIFEROUS MINES RETURNS.

SIR,—Can any of your readers inform me why the postage of forms sent by the Government Inspector to the mining agents for the annual returns is not prepaid, as is done by the Board of Trade in the case of the forms for agricultural returns sent to the farmers?

ECONOMY.

DIVIDEND MINES OF WEST CORNWALL.

SIR,—"A Shareholder," in last week's Journal, asks why Wheal Peevor is not selling at a higher price, especially as it is paying great dividends as other mines—that of South Condurrow. I have no desire to disparage Wheal Peevor or any other mine. I believe Wheal Peevor to be a very good property, and is paying exceedingly well; but your correspondent errs when he states the dividends are as great as that of the mine mentioned. In looking over the Share-list in last week's *Mining Journal*, and taking the dividends declared at the last meeting of shareholders in the undermentioned mines, I find in October last year:—

North Wheal Busy declared a dividend of	.....	£	256
Nov., 1878 —Dolcoath	,, ...		1,074
East Pool	,, ...		480
Wheal Peevor	,, ...		750
West Tolgus	,, ...		512
Jan. 1, 1879—South Frances	,, ...		1,575
Making a total of	.....	£	4,647

On Jan. 2, 1879, South Condurrow paid a dividend of 4898*l.*, which is 251*l.* in excess of the dividends of the whole of the mines in West Cornwall put together. I have no means of knowing how often the Wheal Peevor and other meetings are held, but from the South Condurrow statement I find these accounts embrace a period of 20 weeks. I also notice that after this dividend of 4898*l.* is paid there is a cash balance in hand of 2349*l.* 16s. 11d. carried forward to the next account, and not a single liability to merchants, bankers, or others standing against the company. It appears strange that in nearly all other dividend mines there are liabilities owing to merchants and for lords' dues, whilst bankers' commission forms an important item, and looks very suggestive. ONE WHO IS NOT A BROKER.

WELSH GRANITE QUARRIES.

SIR,—I was very pleased to see from the Supplement to the Journal of Jan. 4 that the above important branch of industry has at last attracted the attention of a correspondent to your largely circulated paper. It has for years been a wonder to me, considering the enormously large business carried on along the shores of Carnarvon Bay, how its importance should have been so long overlooked by capitalists and the public generally. Many of the quarries are, however, (which hitherto has been to the advantage of their owners), situated in isolated localities, which, in conjunction with the very quiet and reserved manner in which their development has been conducted, may account for their being so comparatively little known. These undertakings have now reached such a gigantic scale of operation with the employment of so many hundreds of men upon the work and in navigating the large number of sailing and steam vessels engaged in connection therewith, that public notice is now being directed to this important district from all parts of the kingdom, and in consequence of this there are no less than four new quarries about to be opened out. This district affords exceptional advantages for shipping, there being several naturally sheltered coves along the shores of Carnarvon Bay from Nevin to Clynnog. The trade in some of the quarries has grown to such an extent that their place of shipment, from the number of vessels safely mingled together waiting for cargo, look more like harbours of refuse than specially adapted shipping sites.

I notice in the local papers advertisements for tenders for the erection of 14 cottages at the Nevin Granite Quarries, which I understand are to embrace six rooms each: attached to this block of buildings will be a spacious reading room for the use of the workmen employed in these quarries. This is a step in the right direction. Plans and specifications are being prepared for a large number to be erected for Mr. J. H. White, of Southport, the present proprietor of the North Wales Granite Quarries. These quarries will soon become the second in extent on the coast, and the site for the new village has been selected by this gentleman in a very prettily contoured situation near the quarries, and close to the turnpike road leading from Carnarvon to Pwllheli, and is, I hear, designed to have a picturesque appearance. It is believed that the well-known wealth and enterprise of this gentleman will soon establish quite a distinct quarry district from the one (Welsh Granite Company) immediately opposite. A large number of men are already at work, and an additional 60 or 70 more will be employed in the course of 10 or 15 days or as soon as the present quarry gallery is fully equipped, another vessel with plant and tools being expected daily on the ground.

The present output from all the North Wales quarries does not probably exceed 180,000 tons a year; this quantity is really a small production compared with the enormously increasing demand for the Carnarvon Bay district stone. The following quarries are on the point of commencing operations:—West Nant, adjoining the extensive quarries belonging to Messrs. Kneeshaw, Lupton, and Co.; Pystil, Tan-y-Graig, adjoining the North Wales Granite Quarry, and Aberavon, and in a few years the present output of granite from this district will be more than doubled. There are other quarries nearer Portmadoc, and some inland, but no serious competition can really be brought to bear on such exceptionally favourable advantages for quarrying and shipping as the Carnarvon Bay district quarries possess. The West Nant Quarries, now about to be opened, will have the working galleries taken up immediately from their shipping site, and the other quarries along this district are only a few hundred yards from the sea. Port Nant and Llanaelhairn Bay, however, afford as against that of all others on the coast unusually great faci-

ties for shipment. The Welsh Granite, North Wales, Port Nant, West Nant, and Aberavon quarries are favoured with these special advantages, and the superior quality of the stone from these quarries has been fully and satisfactorily tested, and goes into the market with a reputation of upwards of 20 years' standing; therefore, sooner or later the stone from this district (seeing that it is considered superior to all others, and in my opinion can be delivered f.o.b. at 2s. or 3s. per ton less than that from any Scotch or English quarry, assuming the sett makers in each to earn like wages) is destined to very large extent to monopolise the paving sett trade.

The consumption of granite in the streets of London alone in 1871 was computed at 6,500,000 tons per annum. Looking, therefore, at the extent to which the superior quality of the Carnarvon Bay granite is being recognised by its use in all parts of the kingdom, there is hardly, it seems, a limit to the quantity that could be disposed of from this district. I have had upwards of 20 years' practical experience in the granite paving trade in Guernsey, England, and Wales, and was manager for a lengthened period of one of the principal quarries in North Wales. I, therefore, write with a full knowledge of this business. The superior value of the stone from this district has been and is being made more generally known by the enterprise of Mr. Spargo, of Bangor, who was the lessee of the Nevin Granite Quarries, Carnarvon Bay, and the North Wales Granite Quarries. He is still, I believe, interested in the West Nant, Tan-y-Craig, and Aberavon Quarries, which include all the available quarry sites in this district, and the success attending his exertions he well deserves; and it matters not where his name crops up, one and all seem to wish him the fullest possible success. S. M.

MORFA DU MINE.

SIR,—The opening out of this mine is evidently being rapidly accomplished, and large returns of bluestone will henceforth be made, as I observe are promised by Capt. Mitchel; and if this ore realise only 1*l.* per ton profit, returning only 150 to 200 tons per month, it will be a large interest on the capital paid up (7000*l.*); but it is expected that beneath this bluestone lies fabulous wealth. The present satisfactory working of the Morfa Du at a profit enables the development of the same to be continued without further costs. It is stated that this mine is soon about to enter the Dividend List. It is really refreshing in these depressed mining days to find some tokens of coming prosperity, and I have no doubt that we shall shortly have a reaction in lead and other mines, which will reward the patience of holders of mining shares in no ordinary degree. The great white rock, of similar conformation to that in Parys Mountain, has still to be developed here, and must very soon produce vast results.—*Chester, Jan.* 15. MINING ENGINEER.

BWLCH UNITED MINES.

SIR,—The letter in the Supplement to the Journal of last week on the above mines calls for some notice. Your correspondent's remark as to the shareholders waiting for years for the sinking of the shaft from the 90 to the 100, &c., sounds to me ill-timed, since early last month the same was over 98 fms. in depth, and the said sinking commenced in regular course the end of August by three shifts of picked miners, or over 2 fms. per month, sinking not being driving. The 50-ft. pumping wheel was started to fork the mine to the 90 at the end of March, and, as shown in the manager's reports, a large amount of work has been done. It is not a bad feature, in my opinion, that there is now a great influx of water in the shaft, and it is fully expected that the cross-cut when driven will show the wisdom of deepening the mine as recommended in the prospectus. Your correspondent may be sure the dressing apparatus, &c., will be put in order at the proper time, and I may venture to say at less cost than he estimates. From appearances so far there is a considerable section of productive ground at the 60, the stopes yielding fine blocks of silver-lead ore, and the mineralisation improving in depth; whilst these reserves of ore are being opened other and promising points will be worked upon, the mine will be gaining depth, and the main shaft always ahead of the levels, or as good traders whilst you are selling you will be producing by opening out fresh stores, so when the dressing does commence a regular return of ore can be maintained, thus enhancing the value of the property without beggaring it or making it a most deplorable failure. Mining is the source of all wealth, and legitimately carried on generally pays under good management. The mighty rocks contain its treasure, and this treasure is Nature's investment, not man's; what it gives in abundance it asks for in return to give bread to hands who are willing to work for it.—*London, Jan.* 16. VERITAS.

RHYDALUN.

SIR,—I have been rather surprised that a mine where very rich discoveries have been made—in the heart of the richest lead bearing district in Great Britain, also giving at present large profits, and possessing advantages of water power which is capable of working the mine to a great depth—should not have attracted greater attention than it has done up to this date. I have nothing unfavourable to say as to the merits of the surrounding properties, being persuaded they are sound and good, and will prove to be so. I have, however, known this district for over 30 years, and I predict for Rhydalun as great a success as the "richest of the rich mines" about it has proved, and have no doubt a short time will verify my expectations, and that the fortunate shareholders will realise a large amount on their investments. Sale of lead ore last month 50 tons; so that "facts speak for themselves."—*Jan.* 15. CAPTAIN.

CARDIGANSHIRE MINES, &c.

SIR,—In noticing the letter of "Hard Times," which appeared in the Supplement to the Journal of last week, I would beg to remark that I do not think it a misfortune that his worst anticipations are so soon realised. I will only give a few matters of fact to show you that no other result could by any possibility other than a miracle (and miracles in our days do not very often happen) be looked for. As for many months previous to Goginan having given up the ghost not a man was employed underground on tutwork or for the purpose of opening out ore ground or making discoveries, and every bargain that could be or was let was let on tribute for the apparent purpose of exhausting the mine of the ore that was before laid open, so that by the body being exhausted only the ghost was left. "Hard Times" seems to be of opinion that deep working, poor lode, and low price killed it. I am of opinion that neither of these causes account for the stoppage of Goginan. As there is good ore gone under the bottom level, which has not been sunk for 20 years, and is only one-fifth part as deep as some Cornish mines under adit, and as to the prices of the ore, it is now very nearly equal to the prices obtained for Goginan ores in its best days. Some ground has been worked under the deepest level on tribute. How can "Hard Times," then, call it a poor lode?

I have often expressed an opinion that the Cardiganshire mines will prove very rich in depth—in fact, like Dolcoath and others following it in Cornwall, the deeper they go the richer they will be found. Look at South Darren and Cwm Erfin in the same valley. Cwm Erfin was abandoned by the last company at a point 60 fms. under adit (very little having been done under the 45) as being exhausted after yielding them between 170,000*l.* and 180,000*l.* worth of ore, and over 30,000*l.* profits in about ten years, whilst South Darren has a course of ore, the richest in the county, 60 fms. deeper than the so-called unbottomed Cwm Erfin. What stuff and nonsense! But I will say no more on this head, as Frongoch, the richest and best of the Lisburne Mines, has now gone into other hands, who intend deepening the mine, and 5000*l.* will prove whether the lode is impoverished in depth or not; this will be proof positive for that district. Cwm Erfin, also, has been taken in hand by another company, and the lode will soon be proved in depth as well as length. In concluding this, which is written with a view of attracting attention to Goginan, as the one just now expired, in hopes of its resuscitation, I am persuaded that if the present company would dispose of it for the value of the machinery, as in their hands they have proved it to be a losing concern, and can expect no more than this for it, that in 18 months, with good management and 5000*l.* working capital, Goginan could be made a richer and more productive mine than it has ever yet been. I believe it is now placed in the hands of a liquidator, who will no doubt carry on some little further extraction of ore until he can find a purchaser, for which purpose if the public were enlightened a little they might aid him in procuring one.—*Aberystwith, Jan.* 14. ABSALOM FRANCIS.

P.S.—Such a map as your Correspondent for North Wales, Salop, and Cardigan recommends would prove very useful. The roads, rivers, and brooks, railway stations and shipping ports, and other physical features of the county should be marked accurately. If purchasers for the first edition are found, a second should contain them. A. F.

WHEAL PEEVOR.

SIR,—"Shareholder" is not the only one who expresses surprise at the low price of shares. In a local paper of last week the same question is asked, especially, they say, "as it is now proved to be a good mine." To my fellow-shareholders I would say—Wait a little longer, for I believe there is a good time coming for Wheal Peevor. A mine that can put tin into the market free of all expense for 27*l.* a ton (a thing unparalleled, I believe, in the annals of mining) must indeed be a good one, and the management excellent, and with tin at 40*l.* a ton very large profits would be made. A good mine is sure to make its way, and though Wheal Peevor may not receive any support from the market, yet it is certain to rise far above present quotations simply on its own merits, and those who now buy shares will probably have the pleasure of seeing them rise cent. per cent. before the year closes. The only thing that will prevent this is a further drop in the tin standards. Will tin rise or fall? This difficult question I leave to someone more qualified to judge.

H. C. S.

WHEAL PEEVOR.

SIR,—Referring to the letter in last Saturday's Journal I am as much surprised as your correspondent is at the low price of these shares, and if he would take the trouble, as I have done, of visiting the mine, or of enquiring of the agents, I think he will be convinced that the shares are worth much more than the present quotations. A LOCAL SHAREHOLDER.

MEDLYN MOOR MINE.

SIR,—I was very pleased to see in the Journal from the agent's report on the above mine that they have commenced a cross-cut north of their present workings to intersect the north great tin lode. I have been acquainted with the district for many years, and have always entertained the highest opinion of the north part of this extensive sett. This great tin lode's geological position is different to the lodes further down the Moor, which I think are running at a right angle with the surrounding hills. I have often noticed in different mining localities metallic veins when running at a right angle with the hill to be generally very small. This is not the case with the great tin lode north of the sett, which runs parallel with the hill. I find in the Redruth, Illogan, Camborne, and other districts the great tin lode or lodes which proved so immensely rich are running parallel with the surrounding hills and in the same stratum as the great tin lode at Medlyn Moor Mine. I feel confident as soon as this north lode at Medlyn Moor Mine is intersected it will prove to be a very profitable one to the shareholders.—*Redruth, Jan* 16. P. M.

THE SCOTCH MINING SHARE MARKET—WEEKLY REPORT AND LIST OF PRICES.

Markets are quiet, but the account just commenced—for settlement Jan. 30—opens with a general upward tendency for prices. Trade continues inanimate, but the future is regarded with some degree of confidence. The curtailment of business is not to be considered wholly unfavourable, as, owing to the removal of rotten firms, it is likely what is doing is affording a better margin of profit. The reduction of 1 per cent. made in the Bank of England's nominal minimum to-day to 4 per cent. will make investors more anxious to purchase securities, which are in better supply owing to the recent failures, and at low prices for many good sound stocks, thus everything is favourable for a brisk business.

In shares of coal and iron companies there is no great alteration in prices. Benhar are unaltered at 18s., and have only fluctuated from 17s. to 20s. all the week. As great efforts are being made, it is expected that all the capital necessary to carry on the concern will be secured, when the shares are bound to rise. The Scottish Australian sales for October have been 14,400 tons. Bolckow, Vaughan, A, are at 47; ditto, B, 29¼; and ditto, pref., 19¼. Cakemore, Causeway Green, and Lower Holt United Brickworks and Colliery, ordinary, 62s. 6d.; ditto, 7½ per cent., pref., 65s.; Cardiff and Swansea, 1¼; Ebbw Vale, 3; Great Western, 2; John Brown and Co., 23 dis.; Mersey, 35s. dis.; Newport Abercarn, 3¼; Parkgate, 22 dis.; Rhymney, 14; Sheepbridge, 39¼ dis; South Wales, 3; Staveley, A, 5 dis.; ditto, C, 57; Tredegar, A, 11 dis.; West Cumberland, 13 dis.

In shares of foreign copper concerns the tendency has been upwards. Tharsis are advanced 12s. 6d, and ditto new, 2s. 6d. The last sale of the Cape Company realised 11s. 2¾d. per unit. A considerable improvement is reported in the value of the different lodes being worked at the Yorke Peninsula Mine, and there can be no doubt but that for the very low price of copper this would be one of the most promising dividen l-paying mines. English and Australian shares are at 20s. Rio Tinto 5 per cent., 58½.

Shares of home mines are in better demand, at about late prices. Great Laxey, at 16¾ to 17¼, are quoted ex div. of 5s., payable on Jan. 24 Regarding the Pant-y-Mwyn, it is said that if the Day level had been properly cleared the mine would not get flooded after heavy rain or snow; consequently, under better management, it would pay better. The next sale of the Glasgow Caradon (computed 200 tons of copper ore), for Jan. 23, is just the same as was sold in January, 1878, but for several preceding years, when copper was at a better price, they sold 240 to 250 tons regularly in January. Among tin shares, South Condurrow, now dealt in ex div., are steady, but some of the others are lower, owing to a temporary reduction in the standards, and no doubt to the Cornish bank stoppnge. Bampfylde are at 5s. Combmartin, 8s. East Caradon, 3s. 9d. East Van, 30s. St. Patrick, 10s. Van Consols. 12s.

In shares of gold and silver mines, Richmonds are 5s. lower, at 10¼, and have not fluctuated much all the week. The run is 843,000. Javali has a profit for November of 488*l.*; Chontales, 85*l.*; and Port Phillip for the month ended Nov. 6, 1269*l.* The produce of Don Pedro for December is 3550 oits., and of St. John del Rey 34,500 oits. The yield in the latter case averages 6·5 oits. per ton, and it is understood the mine continues as productive as ever, and probably the returns of profit will be increased before long. They are also endeavouring to secure the entire abrogation of an unjust provincial Brazilian tax, which they have so far succeeded in as to procure its partial remission. Eberhardts have been in better demand, as the reports from the mine will be more important shortly. The last advices from the Isabella show satisfactory progress is being made. Birdseye Creek are at 13s. 9d. Chicago, 10s. to 20s. Colorado, 30s. Don Pedro, 21s. 3d. Exchequer, 4s. Emma, 2s. Flagstaff, 5s. Frontino, 42s. 6d. Last Chance, 11s. 3d. Rossa Grande, 6d. to 1s. 6d. Santa Barbara, 30s. to 34s. South Auroaa, 2s. 6d. to 5s.

Shares of oil companies are in good demand. Uphalls have advanced 1, Young's Paraffin 12s. 6d., and Oakbank 1s. Dalmany are now quoted ex div., Runcorn Soap and Alkali 9 dis.

Shares of miscellaneous companies are neglected. Milner's Safe are at 7½ dis. Native Guano, 70s. Phospho-Guano, 7½ to 8¼. In shares of wagon companies, Scottish are offered 2s. 6d. lower, at 9½. Prices of others are—Ashbury 40, Bristol and South Wales 6¾, Gloucester 7¾, and Swansea 40s. Chemical companies' shares are dull. Lawes, at 8¾ to 9; and Newcastle, 30s. to 40s.

CONSETT IRON COMPANY.—Owing to the depression in the shipbuilding trade this hitherto prosperous company has had to restrict production. They are the largest makers of ship-plates, usually paying 1000*l.* daily in wages, and have seven mills and 160 puddling-furnaces, turning out 1400 tons of plates weekly. These employ 6000 to 7000 hands. They own nine collieries, which employ 2000 miners. Five of the mills are idle, and 300 miners are to be paid off.

The following calculations show the yield per cent. on the money invested at present prices in the shares named, based upon the last average yearly dividends being maintained:—In coal and iron works, Andrew Knowles and Sons would pay 12½; Bolckow, Vaughan, A, 6¼; ditto, B, 6; Charles Cammell and Co., 9¼; ditto 6 per cent. debentures, 6; ditto 5 per cent. debentures, 5; Henry Briggs, A, 3⅜; ditto, B, 3¾; John Brown and Co., 7⅜; ditto 5 per cent. preference, 5; Parkgate, 3¾; Staveley, A, 7⅜; ditto, B or D, 6¾; ditto, C, 7¼; and ditto 5 per cent. preference, 4¾. In wagon companies, Birmingham would yield 10; British, 8⅜; Metropolitan, 7¼; Mid'and, 10; North Central, 7¾; Sheffield, 7¼; and Yorkshire, C, 8. Earle's Shipbuilding would pay 8¾. Milner's Safe, 5¼. Great Laxey Mine, 9⅛. St. John del Rey, 12¾.

On contango-day the following were the rates of continuation current:—Contangoes: 2d. on Benhar; 1½d. on Glasgow Caradon; 3d. on Monkland; 1s. 6d. on Richmond; 9d., 1s., 1s. 4½d., 1s. 6d. on Tharsis; 6d., 7½d. on Uphall Oil.—Backwardations: 9d., 1s. on Young's Paraffin. On comparing the making-up prices for the following shares fixed to-day with those for the same shares at the previous settlement, the variations thus shown to have occurred during the account are: Uphall Oil shares have advanced 17s. 6d., Young's Paraffin 12s. 6d., Tharsis 10s., Benhar 8s., Tharsis (new) 7s 6d., and Huntington 6d. On the other hand, Marbella Iron and Oakbank Oil have each fallen 4s. Glasgow Caradon, Glasgow Port Washington, Monkland and Richmond are all unaltered.

WEST RHYD ALYN LEAD MINING COMPANY (Limited).—The prospectus of this company has just been issued. As the other mines in the district are very rich there is reasonable expectation that this mine will also be successful. The best known of these mines are Minera and Pant-y-Go, from which the late Marquis of Westminster is said to have netted 100,000*l.* per annum for many years. The Pant-y-theryn is only ¼ mile on the south, and the Rhyd Alyn adjoins this mine. Another one which pays well—North Headre—lies to the north, along with Rhosesmor and other good setts. The exact situation of this sett is in the parish of Calcarn, county of Flint, and within 1¼ mile of the Rhydywyn station. A great deal of available work has already been done, and it is anticipated that within a few weeks good results will be met with, as the main lode, which runs through the entire length of the property, is large and well defined, and the mine drained to its present depth by the deep adit, and very likely in a short time the mine will be drained to about 100 yards deeper by the Halkyn Deep Level Company, so that no pumping machinery will be required. The company has been very favourably reported on by eminent experts, among them Mr. Goodman Ellis, of North Hendre. This gentleman says—"The east and west lodes can be traced for about ¼ mile in length, and look strong and promising. I have seen nice lead in it, and have no doubt when proper depth is attained but that it will be a very productive mine." The lease is for 21 years at 8*l.* dead rent, merging in a royalty of 1-16th. The capital is only 15,000*l.*, in 1*l.* shares.

CWM BRWYNO LEAD MINING COMPANY (Limited).—This company's property is rapidly improving in value, recent works having developed a very rich quality of lead in the 80 stope east. The end of this level has intersected the large body of ore going down rich from the 56, and this has opened up a still richer ore nearer west than the point anticipated. A plan of the section of the property has been issued, from which the value of this discovery will be easily understood. The other points of operation maintain their reported value. An analysis of galena taken out of this level gives 81 for lead and 16 ozs. of silver per ton. The capital being issued is 3000 shares of 2*l.* each, which are now at par, but likely to advance a good deal before long.

THE CAKEMORE, CAUSEWAY GREEN, AND LOWER HOLT UNITED BRICKWORKS AND COLLIERY COMPANY (Limited).—In reply to enquiries and communications received from various quarters since our notice of this property, we beg to say, first, that (as we should have thought would have been gathered from what we mentioned) the company is already in full operation, and actively carrying on the business both of coal getting and brick making. Second, we are further informed that it will continue to do so even if the whole of the 5750 shares now being issued with a 7½ per cent. preference be not taken up, an unlikely contingency, however, as they are being very fairly subscribed for; the only result of any being left on hand would be that for a short time longer the profits now accruing to the extent of about 100*l.* per week will be applied towards payments properly belonging to capital account, while, if as the directors are sanguine, the whole issue be allotted a considerable amount of these profits that have already been so applied for some time past will be recouped to revenue account, and be applied to the dividend expected to be paid in April next. Third, that the present output of about 100 tons of coal per day is merely the produce of the gate-roads that have already been driven nearly two miles in the Thick coal seam, and that, owing to the freedom of the colliery from water and other special advantages, even this output realises a good profit on the whole cost of winning it, including the working of these gate-roads, which is pretty nearly as much development work as the making of roads on a building estate, moreover that so soon as these gate-roads reach the boundary (which they are now nearing), and the expense of making them therefore ceases, the cost of winning the coal will be much less, and in consequence of the greater proportion of large coal the average selling price much more, while the output will be considerably more than trebled. Fourth, that the regular make of bricks is already about 120,000 a week, that this is expected to increase to 240,000 by next week, and when the few final touches required to complete the recent extensions of the machinery are finished (which may occupy a week or two more) the capacity of the machinery will be quite up to 300,000 bricks a week. Considering the improved resources of the property the whole capital of the company, 90,000*l.* (in 24,250 ordinary and 5750 preference shares, both of 3*l.* each) is very moderate, and the payment of a very large dividend thereon a certainty, for a colliery that can make handsome profits at a time like the present is quite certain to make much more when any substantial revival of trade takes place. To sum up shortly, there is now no risk or speculation about the undertaking, which has reached such a point that its future operations will chiefly consist of rapidly converting into a marketable state raw materials (of daily and universal use) which have already been proved to exist in almost inexhaustible quantities, and to be readily saleable at a large and certain profit.

Capital. Per share.	Paid up.	Dividends. Rate per cent. per annum. Previous.	Last.	Description of shares.	Last price.
				COAL, IRON, STEEL.	
£ 10	£8	£ 7†	£ 5	Arniston Coal (Limited)	90s.
19	10	4	4	Benhar Coal (Limited)	*18s.
100	50	34s6d‖	25s‖	Bolckow, Vaughan, and Co. (Lim.)...A.	47
10	10	10	10	Cairntable Gas Coal (Limited)	7
10	10	4s‖ April, 1876		Chillington Iron (Limited)	50s.
10	—	—	—	Clyde Coal (Limited)	40s.
23	20	10s‖ Dec., 1874		Ebbw Vale Steel, Iron, and Coal (Lim.)	60s.
10	6	nil	nil	Fife Coal (Limited)	55s.
10	10	nil	nil	Glasgow Port Washington Iron&Coal(L)	35s.
10	10	—	—	Ditto Prepaid	35s.
10	10	—	—	Lochore and Capledrae (Limited)	40s.
10	10	nil	3	Marbella Iron Ore (Limited)	25s.
10	10	nil	nil	Monkland Iron and Coal (Limited)	16s.
10	10	5	4	Ditto Guaranteed Preference..	40s.
100	100	nil	nil	Nant-y-Glo & Blaina Ironworks pref.(L)	20
6	6	nil	nil	Omoa & Cleland Iron & Coal (L. & Red.)	2s. 6d.
1	1	15	15	Ditto New	15s.
Stock	100	nil	nil	Shotts Iron	60
				COPPER, SULPHUR, TIN.	
4	4	—	—	Canadian Copper and Sulphur (Lim.)	5s.
10	7	77s 6d‖	35s‖*	Cape Copper (Limited)	30
1	1	7½	2½	Glasgow Caradon Copper Mining (Lim.)	15s.
1	15s.	7½	2½	Ditto New	13s. 6d.
10	9¾	nil	nil	Huntington Copper and Sulphur (L.)	12s. 6d.
4	4	—	—	Panulcillo Copper (Limited)	20s.
10	10	6†	6†	Rio Tinto (Limited)	52s. 6d.
20	20	7	7	Ditto, 7 per cent. Mortgage Bonds..	13
100	100	5	5	Do. 5 p.ct. Mor. Deb. (Sp. Con. Bds.)	56¼
10	10	20	17½	Tharsis Copper and Sulphur (Lim.)	21¾
10	7	20	17½	Ditto New	14¾
1	1	—	—	Yorke Peninsula Mining (Limited)	5s.
1	1	—	—	Ditto, 15 per cent. Guaranteed Pref.	15s.
				GOLD, SILVER.	
1	1	—	—	Australian Mines Investment (Lim.)	5s.
5	5	30s.‖	10s.‖	Richmond Mining (Limited)	10¼
				OIL.	
10	7	15	5	Dalmeny Oil (Limited)	6*l.* 13s.
1	1	25	15	Oakbank Oil (Limited)	35s.
1	5s.	—	15	Ditto	11s.
10	10	7½	2	Uphall Mineral Oil (Limited) "A"	5¾
10	10	—	—	Ditto "B" Deferred	10
10	10	—	—	West Calder Oil (Limited)	15s.
10	8½	17½	17½	Young's Paraffin Light & Mineral Oil(L)	13½
				MISCELLANEOUS.	
50	25	5	6	London & Glasgow Engineering & Iron Shipbuilding (Limited)	21
7	7	15	10	Phospho Guano (Limited)	8½
10	10	6	6	Scottish Wagon (Limited)	9½
10	4	6	6	Ditto New	7½

† Interim. ‖ Per share. * For six months of 1878.

NOTE.—The above lists of mines and auxiliary associations are as full as can be ascertained, Scotch companies only being inserted, or those in which Scotch investors are interested. In the event of any being omitted, and parties desiring a quotation for them and such information as can be ascertained from time to time to be inserted in these lists, they will be good enough to communicate the name of the company, with any other particulars as full as possible.

J. GRANT MACLEAN, Stock and Share Broker.

Post Office Buildings, Stirling, January 16.

A COPPER KING.—It has not been without some pride that modern writers have dwelt upon the marvellous success achieved by the enterprise and ability of men prominent in some industry. This country boasts of great railroad magnates. England has its cotton lords and iron barons, who vie with the champagne, silk, and chocolate nobles of France. Chili is now mourning its copper king, Don José Tomas Urmeneta, whose career is well worth a passing notice, especially as an early business education in this country may have done much to influence his success. Don José, born in 1808, was left an orphan when ten years of age. His brother, an intelligent merchant, sent him five years later to Providence, R. I., a step which draws from his enthusiastic Chilean biographer a sorrowful comment upon the "country where the ice leaves the ground for four months in the year only, but never thaws in the hearts of its people." Urmeneta survived the terrors of several Rhode Island winters, and returned home after having been instructed in a business college for four years, where he seems to have learned enough to appreciate the excellence of American manufactures, for we find him making his first business venture in taking from Providence a large amount of goods, realising a profit of $500 per case. He set out again at once for England, France, and Spain as a partner in a firm established with two others, which, however, ceased operations on account of the troubles in Spain. Urmeneta then went to England, where he spent four years. After his return to Chili he settled down to farm life, and turned his attention to some old abandoned copper mines at Tamaya, which, according to family traditions, had been very rich. For fourteen years he devoted all his energies to the development of these mines with that untiring zeal which is so often characteristic of prospectors and miners. In 1849 his labours were rewarded by the discovery of rich oxidised copper ore in immense

quantites in the Pique Mine, which in 20 years turned out as much as $10,000,000. Together with Carlos Lambert he developed the methods of treating the sulphurets of copper which the inexperienced miners of Tamaya rejected. He erected great establishments at Guayacan and Tongoi, contracted with Meiggs for the construction of a railway from the latter place to the mines for $700,000, encouraged coal mining in the South of Chili, developed the wealth of the province of Atacama, and was always one of the foremost in aiding industrial enterprise. He was a philanthropist, or, as our Spanish chronicler puts it, he "hid under the cold civility of an English gentleman one of the noblest and most genuinely Chilean hearts."—*Iron Age* (New York),

FOREIGN MINING AND METALLURGY.

M. Bonehill has just purchased the Marchienne rolling mill (Belgium), which he directed as manager when the establishment was in the hands of a company. The circumstance would appear to indicate that practical men in Belgium do not despair of the future of the Belgian iron trade. MM. Schwab, of Galatz, have invited tenders for 19 lots of steel rails, fish-plates, and bolts required for lines in Roumania. The quantity of casting pig made in Belgium in the first half of 1878 is officially computed at 16,300 tons, as compared with 32,200 tons in the corresponding period of 1877. The quantity of pig for refining made in Belgium in the first half of 1878 is officially computed at 205,000 tons, as compared with 202,000 tons in the corresponding period of 1877. The number of workmen engaged in the production of pig in Belgium in the first half of 1878 was 4075, as compared with 3092 in the first half of 1877. Iron, properly so called, was made in Belgium in the first half of 1878 to the extent of 196,500 tons, as compared with 183,000 tons in the corresponding period of 1877. The number of men employed in the first half of 1878 was 12 700, as compared with 11,700 in the first half of 1877. The German house of Harkort delivered the lowest tender for trucks at an adjudication which took place last week at La Haye. Contracts for steel rails are about to be let for the Rhenish Railway, and also for the German Government lines in Alsace and Lorraine.

There has been a good deal of activity in the Belgian coal trade in consequence of the cold weather, but, a change having set in, this activity will probably now slacken. Prices have experienced no advance. It appears from an official return issued by the Belgian Minister of Public Works that the production of coal in Belgium in the first half of 1878 amounted to 7,258,500 tons, extracted by 98,000 workpeople, earning on an average 2s. 4d. per head per day. The corresponding production in the first half of 1877 was 6,594,000 tons, extracted by 98,500 workpeople, earning on an average 2s. 6d. per head per day. A considerably increased quantity of coal was thus raised in the first half of 1878, and at rather less cost for labour. There were 161 collieries in activity in Belgium in the first half of last year, as compared with 164 in activity in the first half of 1877.

Notwithstanding that the new year must now be said to have fairly commenced, business in iron still remains extremely quiet in the French department of the Haute-Marne. Orders for merchants' iron are few and scant, even for reassortments. In the foundries work has also somewhat slackened. Orders for stoves and articles of that kind are for the present exhausted; the sale of them has not been unsatisfactory, but it has terminated for the present. But for the railway and mechanical demand for iron many works would be wholly unoccupied; and even as it is operations are being carried on to some extent for warehousing. In the Nord the works are somewhat less short of orders than in the Haute-Marne. In the Loire-et-Rhône business has continued very quiet; nevertheless, the proprietors of the works consider that there are real requirements to satisfy, and that they will shortly have to satisfy them. Iron is quoted in the Loire-et-Rhône at 6*l.* 12s. per ton at the forges, and at 7*l.* to 7*l.* 4s. per ton in the warehouses.

Registration of New Companies.

The following joint-stock companies have been duly registered:—

RHINE AND MOSELLE MINING COMPANY (Limited).—Capital 30,000*l.*, in shares of 1*l.* To acquire by purchase the several mines and effects comprised in a contract made Dec. 4 1878, between Robert Smith on the one part and Charles Stephen Hill as trustee for the company on the other part. To acquire by purchase in whole or part mining setts, grants, leases, licenses, concessions, or other interests in lands, mines, mineral properties, rights, and effects in the German empire and elsewhere. To search for, mine, work, dress, smelt, fuse, and reduce or otherwise to improve and render saleable the ores, metals, &c., that may be obtained. To make roads, railways, tramways, sidings, &c., and to purchase or otherwise acquire such land as may be necessary. To carry on the business of a mining and smelting company in all its branches. The subscribers (who take one share each) are—E. Vansittart Neale, 12, Church-row, Hampstead, barrister; C. S. Hill, Beckenham, gentleman; G. Gourland, The Downs, Clapton, coal merchant; W. C. Parkinson, Cottage-lane, City-road, gas engineer; S Mart, 3, Crown-square, Bow, wine merchant; W. Fullford, 251, Pentonville-road, stationer; C. Cakebread, 223, White-street, machine maker. Qualification of directors 200 shares each.

GLOUCESTERSHIRE DAIRY COMPANY (Limited).—Capital 10,005*l.*, in shares of 10*l.*, and one founder's shares of 5*l.* To carry on the business of dairymen and provision dealers in all its details. The subscribers (who take one share each) are—W. H. Budgate, Bristol; E. K. Stow, Stoke Bishop; E. A. Harvey, Bristol; M. Whitwell, Bristol; G. K. Morgan, Bristol; W. M. Baker, Bristol; W. Bennett, Bristol.

THE GENTLEMAN'S DRESS AND GENERAL OUTFITTING ASSOCIATION (Limited).—Capital 100,000*l.*, in shares of 5*l.* To carry on the business of gentleman's dress and general tailors and outfitters in all their branches. The subscribers (who take one share each) are—Lord Leonards, 33, Elvaston-place, South; E. L. Paraire, 36, Mornington-crescent, N.W.; C. W. Thompson, 21, Cumberland-place; J. W. Bushe, 8, Alfred-place West; E. R. Gray, 9, Petersham-terrace; R. H. Ashton, 11, Garrick-street; G. H. Phillpotts, Bolton-road, Chiswick.

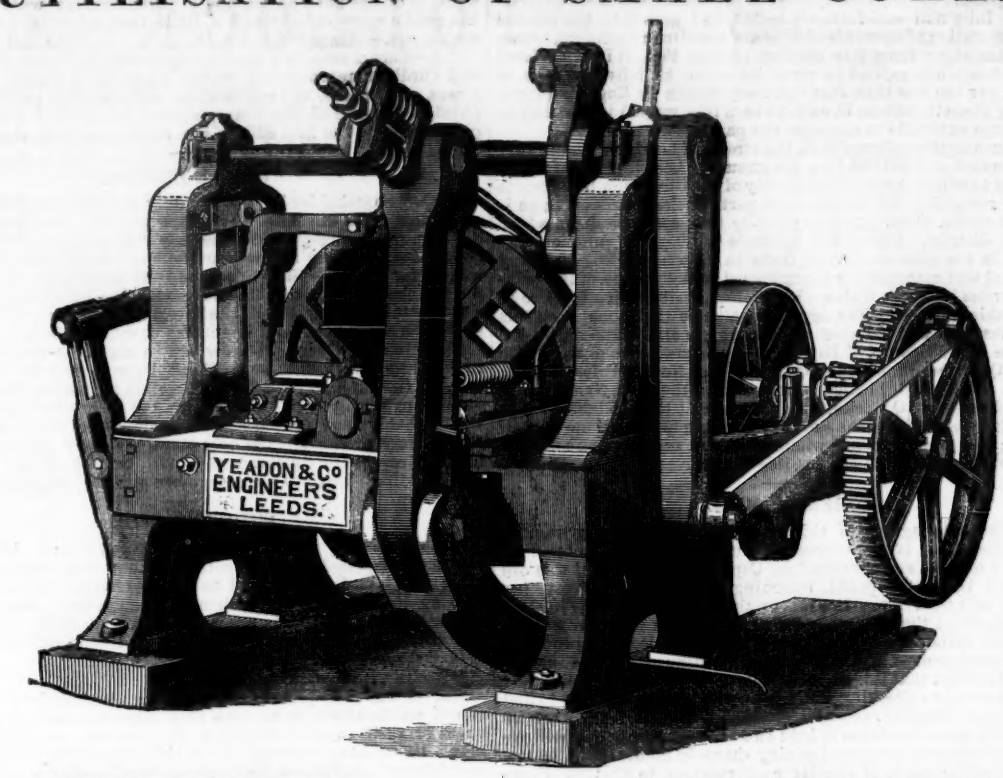
PAR SMELTING WORKS (Limited).—Capital 15,000*l.*, in shares of 20*l.* To acquire by purchase or otherwise the Par Smelting Works, in Cornwall, together with the plant, buildings, and machinery belonging to the same, as well as rights and powers. To dress, reduce, smelt, and prepare, and to purchase and sell minerals and metals of all kinds. The subscribers are—W. Gundry, 7, Draper Gardens, stock jobber, 100; J. Alington, Little Barford, gentleman, 50; T. Gundry, Torfrey Par Station, Cornwall, gentleman, 100; W. Page, Holland-road, gentleman, 100; F. L. Slous, Stock Exchange, gentleman, 50; F. Hunt, Stock Exchange, sharedealer, 100; R. Oldrey, Weedon, gentleman, 100; E. P. Oldrey, Willesden-lane, stock jobber, 50; H. D. Broome, 34, Avenue-road, stock jobber, 100.

CLEETHORPE'S SPURN VIEW BUILDING COMPANY (Limited).—Capital 5700*l.*, in shares of 300*l.* To purchase, lease, or rent, and to build, buy, let, and sell house and buildings of every kind upon the said land. The subscribers (who take one share each) are—W. Archer, Cleethorpe; T. Samby, Cleethorpe; G. Field, Great Grimsby; J. Nuttell, Cleethorpe; J. Allcroft, Cleethorpe; W. Lumb, Cleethorpe; J. K. Simpson, Grimsby.

SKEGNESS PIER COMPANY (Limited).—Capital 20,000*l.*, in shares of 5*l.* To erect and maintain at Stegness, Lincolnshire, a pier and jetty, and other works, which will provide an ornamental and commodious promenade, and also a convenient landing stage for passengers and their luggage, with refreshment, bath, and other rooms. The subscribers are—James Marten, Wainfleet, 20; H. Tippett, Sandbuk Tickill, 20; W. Everington, Skegness, 5; H. Dumbley, Skegness, 10; C. Hildred, Skegness, 5; J. A. Bellamy, Spilsby, 5; E. G. Loverseed, jun., Nottingham, 5.

THE PARIS BONNET AND MILLINERY SUPPLY ASSOCIATION (Limited).—Capital 50,000*l.*, in shares of 5*l.* To manufacture, buy, sell, and deal in bonnets, hats, caps, and other headgear for women and children, and to carry on a milliner's business. The subscribers are—W. L. Darley, Naval and Military Club, 3; E. R. K. Gray, 9, Petersham-terrace, 6; J. B. Marshall, 4, Gray's Inn-square, 4; A. Symonds, jun., Oxford and Cambridge Club, 4; H. Valance, 20, Essex-street, 3; A. K. Blair, 7, Hyde Park Gate, South, 3; J. W. Bushe, 8, Alfred-place, West, 3.

UTILISATION OF SMALL COAL.



UTILISATION OF SMALL COAL.

Although from the abundance and comparative cheapness of round coal in this country little attention has hitherto been paid to the manufacture of small coal into a marketable article, it forms an important branch of industry in France, Belgium, and many other places, and there can be no doubt that in many instances the utilisation of the slack makes the difference whether the colliery is worked at a loss or at a profit. Under these circumstances it is not surprising that the fact should now be recognised that one of the principal questions of the present day with all our large collieries is how to reduce the proportion of small coal, and how to utilise the same in the most profitable manner. In many collieries the loss is not felt to be very serious, in consequence of the small coal being made into coke, which finds a ready market amongst ironworks when trade is moderately good. This, however, which can only be done with certain qualities of coal, involves a considerable outlay in washing apparatus, coke ovens, &c., so as to materially affect the profit on the same, particularly when, as in times like the present, the iron trade is in such a wretched condition that it is very difficult to obtain a profitable price for the coke when made.

Others again, as in South Wales, utilise the small coal by making it into artificial fuel; but in addition to the process of manufacture adopted there being very expensive, the machinery is also very costly, whilst the blocks themselves when made are heavy and cumbrous, and quite unfitted for household, locomotive, or other purposes, little, or any, being used at home. For some time there has been felt to be a want of some simple and economical plant and process for utilising the great quantity of small coal which is lying useless and profitless at so many of our collieries.

Some time ago M. Fagès, the general manager of one of the largest collieries in Belgium, visited this country, for the purpose of obtaining the best machines and plant for utilising small coal, and making it into "briquettes," or blocks of artificial fuel. After carefully examining the different processes of manufacture he communicated with Messrs. Yeadon and Co., of Leeds, the well-known colliery engineers and contractors, who supplied him with two of their patent briquette machines, together with the complete plant in connection with the same, and which, after working and thoroughly testing for some time, M. Fagès pronounces to be the "best machines he knows of, after having carefully studied all the briquette machines at home and abroad." In these days, when so much is said about foreign and particularly Belgian competition, such a testimony to the pre-eminence of English manufacture is all the more gratifying.

We have pleasure in illustrating this machine this week, and giving the following particulars as to the process and cost of manufacture. The smudge or small coal is raised by elevators into a hopper, which has two horizontal sliding doors, so as to measure the quantity. The cohesive material is ground in an ordinary mill, mixed with water or other liquids, and a certain proportion of this put into the mixing pan with the smudge, where it is thoroughly mixed together; it then falls into the hoppers of the briquette machines, where it is fed into the vertical mould plate, moulded, compressed, and turned out at the rate of 60 briquettes per minute from each machine, equal to about 25 tons per day.

One great advantage in this machine and process is that no skilled labour is required; the size of the briquettes makes them specially suitable for household, locomotive, or other purposes, being only from 2 to 3 lbs. weight each; but the principal advantage lies in the cheapness of the process, the whole cost of making, preparing, and mixing, including cohesive material, is under 1s. per ton. The cost of a complete plant, including engine boiler, &c., to make 50 tons per day is under 1100*l.* Of course, it will be at once understood that the machines cannot either improve or reduce the quality of the briquette, in cases of inferior quality of coal, gas tar, shale oil, petroleum, or other cheap liquids are added in the mixing, to produce the required quality. We may say that Messrs. Yeadon and Co. are already in treaty for supplying some of the largest collieries in this country and on the Continent with briquette plants; and from the simple and inexpensive nature of the plant and process we have no doubt many other collieries will be glad to adopt such a feasible means of increasing their profits.

PREVENTING RADIATION OF HEAT.—A new composition for preventing radiation of heat, invented by Mr. P. STRELITZ, of Berlin, is composed of clean fossil dust 25 parts; rye meal, 4 parts; coal tar, 4 parts; animal hair, 2 parts; cotton seed, 5 parts; pulverised clay, 5 parts; and water, 55 parts. The fossil dust is cleansed in a washing machine, and the sand and vegetable matter driven off; then the fossil dust is dried and finely ground in a mill; the coal tar is deprived of its water by boiling; the animal hair is drawn asunder and separated in a willowing machine, and by means of a sieve freed from sand, &c.; the cotton seeds are boiled, and all the ingredients are mixed together in a mixing machine, the tar and cotton seeds being placed therein in a boiling state. When the mixing operation has been thoroughly performed the mixture is submitted to a process of fermentation in a warm place, the duration of which is governed by the temperature, and is completed when the composition has reached a state of complete rest. A temperature of from 55° to 65° Fahr. is sufficient for fermentation. The fermentation may be continued for from four to five days. The composition can be applied not only to all surfaces which are heated by steam, water, or air without injury to the surfaces covered, but also to surfaces subject to constant shocks, as in the case of locomotives and tubes connected to steam-hammers. A coating of the new and improved composition of from 8 to 13 millimetres in thickness is sufficient even for high-pressure steam-boilers, the improved composition being very efficient for preventing the ra tion of heat. It is very useful for coating pipes, as it does not volve loading them with a heavy weight of material necessary w other kinds of coating are used; moreover, owing to its prope of absorbing moisture, oxidation of surfaces consequent upon posure to moisture is by its use obviated.

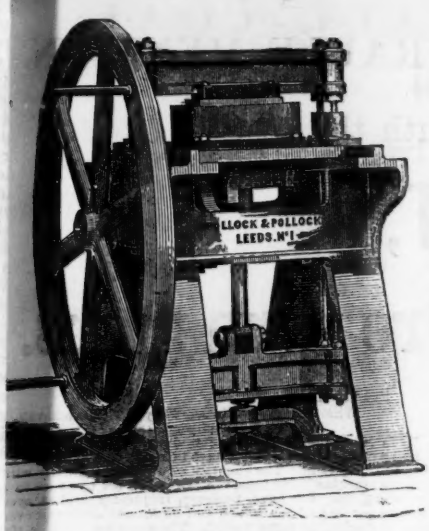
NEW MACHINE FOR WASHING COAL.—The great difficulty ari from a fitful and insufficient supply of water, often experienced coal owners in this district in cleaning small coal, seems now t fully overcome by a new coal washing machine erected at Bul Pit, for Messrs. Mulcaster and Co., by Mr. Shepherd, of South Wa The machine by the aid of an endless chain of boxes receives small coal at the foot of the screens and empties it into a raft wh which elevates and throws its contents into a launder supplied w water by a force pump, where a shaft is kept in motion, so that the action of the water the lighter portion—the good coal—is carr off into a receiver at the extreme end, and ultimately to another n wheel, which lifts and empties it into a wagon; while the refu which remains behind is carried away to the heap. The machine constructed so as to be capable of clearing three or four hundr tons per day, and only two persons are needed—one to attend t engine and the other the wagons. The water supply needed in t launder is continually forced back again by a pump for that purpo so that the only loss of water in the operation is that absorbed i the coal. The cost is said to be about 1000*l.* Another of the machines is being fitted up at Aspatria Colliery by the same firm

PREVENTING BOILER EXPLOSIONS.—The apparatus for preven ing boiler explosions invented by Mr. JOHN NAPIER, of Edinburg consists in attaching to the boiler or vessel a plate of copper or oth metal of similar qualities and ductility, which plate is firmly secur between two perforated plates of iron or other metal, and is cover by them on its upper and lower sides, except at the places of pe foration, these places corresponding to each other in the upper a lower plates. The perforations are greater or less in diameter, a cording to the size of the boiler. Direct communication is est blished between the apparatus and the interior of the boiler, and a cording as the thickness of the intermediate plate aforesaid is vari with reference to the strength of the boiler or other vessel it resis a greater or less pressure, and when this pressure is exceeded t steam or other agent causes the intermediate plate to give way one or more points between the corresponding perforations of t upper and under plates, and by the steam or other agent escapi from the boiler or vessel an explosion is prevented. The apparat which is intended to be accessory to the ordinary safety-valve, m be either attached to the boiler or other vessel, or fitted to a tube neck secured to the boiler or vessel; in order to give additional s curity the apparatus may be fitted in two or more places on t boiler or vessel subjected to pressure the plates are so attached t gether and to the boiler that the intermediate plate may be readi removed, and replaced by a fresh one.

THE ST. GOTHARD TUNNEL.—The Gothard tunnel is now t longest tunnel in the world, the length, bored from both sides, read ing a total of 13,481 yards—23 yards longer than the Mont Cen Very nearly 3000 yards still remain to be excavated, and if the wo goes on as rapidly this year as it went on last the navvies fro Goschen and those from Airolo may expect about this time twelv month to shake hands in the heart of the mountain. This, howeve is far from being a certainty, for according to the calculations of t geologists, the workmen will find directly under the Kastelhorn thick mass of serpentine and schist, which may prove a considerab hindrance. Most of the labourers employed in the galleries a Italians. They work night and day in shifts of eight hours eac and their work is described as being terribly severe. The heat so great that they can wear no clothes whatever. They return the mouth of the tunnel streaming with perspiration, their faces a yellow and ghastly, they cannot bear the light of the sun, they wal with bent shoulders, and stagger as if carrying burdens too heavy f their strength. They are nevertheless said to be cheerful and ev merry. They support their hard lot without repining, and sa money. It is satisfactory to know that the contractors by whom the men are employed treat them with every consideration. surgeon is always on the spot, accidents being frequent, and amp hospital accommodation is provided for the ailing and the hurt.

THE ESTON STEELWORKS.—Messrs. Hopkins, Gilkes, and Co. hav started three mills, which had been idle for some time owing to de pressed trade. It is said they intend lighting up about 18 puddlin furnaces also through a spurt in orders. Messrs. Fox, Head, and Co Newport Rolling Mills have re-started from a similar cause, Th Eston Steelworks, which had stopped owing to the higher cla workmen (rollers, &c.) resisting a reduction of wages, have bee re-lit, as most of the hands had come in on the reduction.

STEAM ENGINES.—The object of the invention of Mr. A. DOBSON of Belfast, is to afford increased facilities for the passage of steam to and from the cylinder in operating the piston and in controlling the motion of such valves. He employs rotary valves, and form them with a succession of passages through them, so as to obtain sort of grid, by which, with a small amount of rotary motion t such valve, a large amount of steam way is quickly obtained either for the admission to the piston or for the shut-off. He form the exhaust valves similarly, but with increased number or size o passages to those for the admission, to facilitate the escape of th exhaust steam from the cylinder. The inlet and outlet valves may work in the same or separate valve-boxes. To give a quicker mo tion to these valves he operates them by cam or tappet, and th valve-rod is also connected by bell crank or other suitable lever t the governor.



POLLOCK AND POLLOCK,

LONGCLOSE WORKS, NEW TOWN, LEEDS,

POLLOCK'S PATENT BRICK PRESS,

The New "XL" Brick-Making Machines,

THE CHEAPEST AND BEST IN THE MARKET.

Improved Grinding Pans, with patent self-acting delivery.
Vertical and Horizontal Engines.

COLLIERY ENGINEERS.—WINDING ENGINES OF ALL SIZES.

POLLOCK AND MITCHELL'S PATENT KILNS are the Cheapest and Simplest.

London Office—155, Fenchurch Street, E.C.

GOLD MEDAL—PARIS EXHIBITION,

1878.

HIGHEST AWARD FOR

English Pumping Machinery.

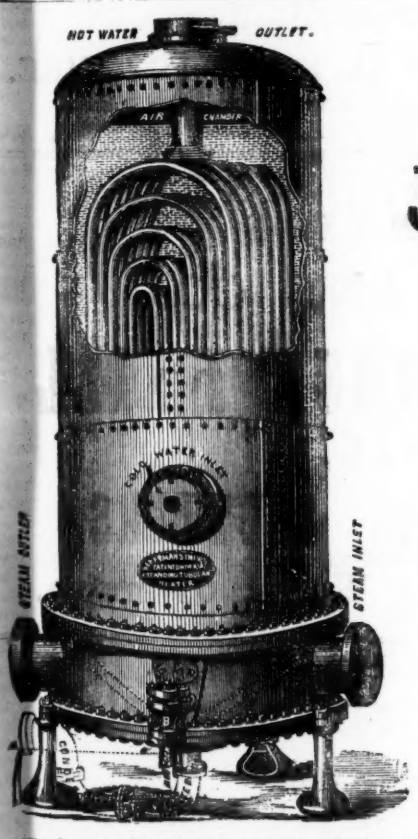
DIFFERENTIAL

PUMPING ENGINES.

HATHORN, DAVEY, AND CO.,

ENGINEERS, LEEDS.

CATALOGUES ON APPLICATION.



IMPORTANT.

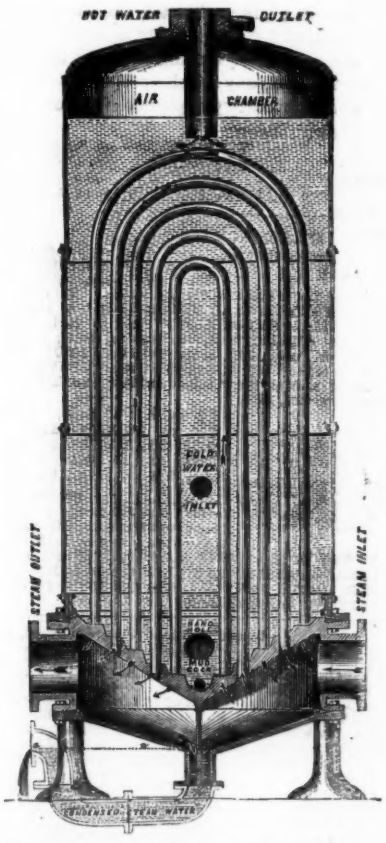
JOSEPH WRIGHT AND CO.

(LIMITED),

NEPTUNE FORGE ENGINE AND BOILER WORKS,

TIPTON, STAFFORDSHIRE,

AND AT 147, QUEEN VICTORIA STREET, LONDON, E.C.



Having purchased the Engineering Business lately carried on by R. BERRYMAN AND CO., at 23, Congreve-street, Birmingham, and 28, Wilson-street, Finsbury-square, London, have removed the whole to their Works at TIPTON, to which place ALL COMMUNICATIONS SHOULD IN FUTURE BE ADDRESSED, and where the BERRYMAN HEATER can be seen at work, and in every stage of manufacture.

Being the SOLE MAKERS and PATENTEES of these CELEBRATED COAL SAVERS and EXHAUST STEAM UTILISERS, and having remodelled and greatly improved them, adding largely to their HEATING SURFACE and WATER CAPACITY, J. W. and Co. have put down a special plant, which includes an entire new set of improved patterns, enabling them to offer these FEED WATER HEATERS to the public at

GREATLY REDUCED PRICES.

This arrangement of BRASS TUBES of a great length giving an enormous HEATING SURFACE makes this HEATER not only the MOST POWERFUL ever invented, but its FIRST COST PER FOOT OF HEATING SURFACE IS LESS THAN HALF THAT OF ANY OTHER. It will condense the whole of the Exhaust Steam from the Engine if required, and entirely does away with the NOISE and BACK PRESSURE from exhaust pipes.

ALL THE TUBES ARE OF SPECIALLY PREPARED SOLID DRAWN BRASS AND COPPER; both ends are expanded into the bored holes of the same Tube Plate, METAL to METAL, and every tube is free to expand and contract independent of each other. Leakage is impossible, as, when the tubes are once fixed, nothing short of cutting out will remove them. No scurf adheres to the tubes because of the difference of expansion between SCURF and BRASS. The inside of the Heater can be washed out by means of the mud cock and hand hole whilst at work.

Only one pump or injector is required, and as the Heater is placed between the pump and the boiler, the water is forced, COLD, into it, and passes out at the top HOT into the boiler direct. Where the WATER WORKS PRESSURE is sufficient no pump or injector is needed.

The water being heated to BOILING POINT UNDER PRESSURE in the Heater, a saving of from 20 per cent. to 25 per cent. in fuel is effected; the disastrous results of grease in boilers are also avoided, the sewage and other loose matter in the water being deposited in the Heater, the acids are liberated there instead of in the boiler.

Every part can be lined with BRASS, COPPER, or LEAD, as may be required in special cases for heating water or any kind of liquor in large quantities for CHEMICAL WORKS, BATHS, WASH-HOUSES, AQUARIA, GREENHOUSES, BREWERIES, WOOL WASHING, DYE WORKS, TANNERIES, &c., &c.; they will also HEAT AIR FOR CUPOLAS AND BLAST FURNACES, and are now at work as INTERHEATERS for compound engines with direct steam from the boiler with a further saving of 15 per cent.

The New Price List, with detail information is now ready, and will be sent on application, together with an Illustrated Catalogue, with references and testimonials from Firms using THREE HUNDRED AND THIRTY-THREE of these Heaters.

At the PARIS EXHIBITION the Jurors have Awarded

THE GOLD MEDAL, THE SILVER MEDAL, AND HONOURABLE MENTION

FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

H. R. MARSDEN,

ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

Improved Patent Stone Breakers & Ore Crushers

New Patent Reversible Jaws, in Sections, with Patent Faced Backs.

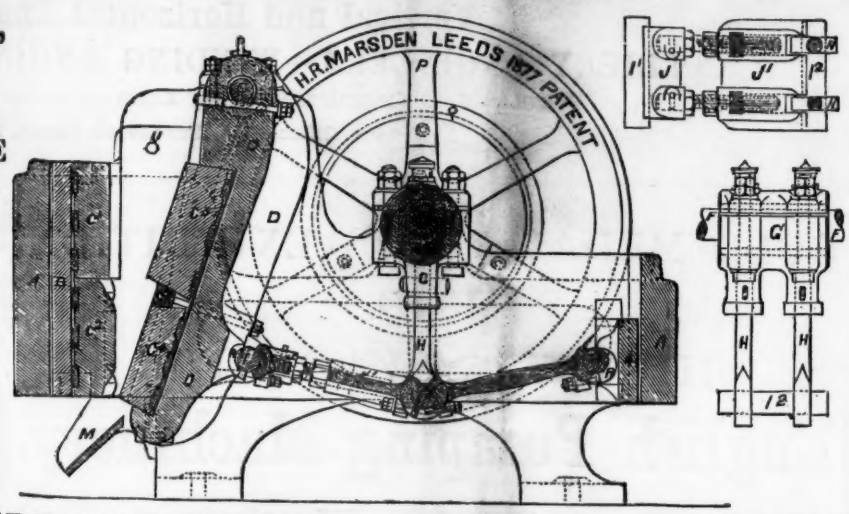
NEW PATENT ADJUSTABLE TOGGLES.

OVER **2500** IN USE.

New Patent Draw-back Motion.

NEW PATENT STEEL TOGGLE BEARINGS.

70 PRIZE MEDALS.



READ THIS—

Wharthole Lime Works, Maryport, Whitehaven, November 7, 1873.

H. E. MARSDEN, Esq., Soho Foundry, Meadow-lane, L

DEAR SIR,—The machine I have in use is one of the size, 24 in. by 12 in. The quantity we are breaking daily this one machine is 250 tons, the jaw being set to break size of 2¼ in. We have, however, frequently broken 300 tons per day of ten hours, and on several occasions 360 tons during the same period. The stone we break is blue mountain limestone, and is used as a flux in the ironworks in this district. We have now had this machine daily use for over two years without repairs of any kind have never had occasion to complain of any inconvenience using the machine. I hope the one you are now making me may do its work equally well. The cost—INCLUDING GINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPE OF EVERY KIND—is just 3d. per ton. Should any of friends feel desirous of seeing one of your machines at I shall have much pleasure in showing the one alluded to.

I am, dear Sir, yours very truly,

WILLIAM MILLE

AND THIS—

Wharthole Lime Works, Aspatria, Cumberland, July 11th, 1878.

H. R. MARSDEN, Esq., Soho Foundry, Leeds.

DEAR SIR,—We are in receipt of your letter of 4th Ins may just state that the stone breaker above named has under my personal superintendence since its erection, a have no hesitation in saying that it is as good now as it five years ago.

I am, dear Sir, yours faithfully,

FRANCIS GOUL

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.

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